SEQUENCE LISTING

<110> MCCARTHY, Sean A
      BARNES, Thomas M
      FRASER, Christopher C
      SHARP, John D

<120> NOVEL GENES ENCODING PROTEINS HAVING DIAGNOSTIC,
      PREVENTIVE, THERAPEUTIC, AND OTHER USES

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<141> 2001-10-25

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<151> 1999-06-14

<150> US 09/578,063
<151> 2000-05-24

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Cys Tyr Val Ala Glu His Glu Asp Gly Val Tyr Trp Lys Tyr Cys Glu
             100   105   110

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Phe Gly Asp His Thr Gln Pro Cys Gly Gly Asp Gly Arg Ile Ile Leu
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Phe Asp Thr Leu Val Gly Ala Cys Gly Gly Asn Tyr Ser Ala Met Ser
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Ser Val Val Tyr Ser Pro Asp Phe Pro Asp Thr Tyr Ala Thr Gly Arg
225   230   235   240

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Leu Asp Gly Tyr Thr His Arg Val Leu Ala Arg Phe His Gly Arg Ser
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Arg Pro Pro Leu Ser Phe Asn Val Ser Leu Asp Phe Val Ile Leu Tyr
                290   295   300

Phe Phe Ser Asp Arg Ile Asn Gln Ala Gln Gly Phe Ala Val Leu Tyr
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Gln Ala Val Lys Glu Glu Leu Pro Gln Glu Arg Pro Ala Val Asn Gln
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Thr Val Ala Glu Val Ile Thr Glu Gln Ala Asn Leu Ser Val Ser Ala
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Ala Arg Ser Ser Lys Val Leu Tyr Val Ile Thr Thr Ser Pro Ser His
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Pro Pro Gln Thr Val Pro Gly Ser Asn Ser Trp Ala Pro Pro Met Gly
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Asn Tyr Cys Arg Asn Pro Asp Gly Asp Val Ser Pro Trp Cys Tyr Val
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Ala Glu His Glu Asp Gly Val Tyr Trp Lys Tyr Cys Glu Ile Pro Ala
                85   90   95

Cys Gln Met Pro Gly Asn Leu Gly Cys Tyr Lys Asp His Gly Asn Pro
            100   105   110

Pro Pro Leu Thr Gly Thr Ser Lys Thr Ser Asn Lys Leu Thr Ile Gln
        115   120   125

Thr Cys Ile Ser Phe Cys Arg Ser Gln Arg Phe Lys Phe Ala Gly Met
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Glu Ser Gly Tyr Ala Cys Phe Cys Gly Asn Asn Pro Asp Tyr Trp Lys
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Tyr Gly Glu Ala Ala Ser Thr Glu Cys Asn Ser Val Cys Phe Gly Asp

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165   170   175

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Leu Val Gly Ala Cys Gly Gly Asn Tyr Ser Ala Met Ser Ser Val Val
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Tyr Ser Pro Asp Phe Pro Asp Thr Tyr Ala Thr Gly Arg Val Cys Tyr
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Trp Thr Ile Arg Val Pro Gly Ala Ser His Ile His Phe Ser Phe Pro
225   230   235   240

Leu Phe Asp Ile Arg Asp Ser Ala Asp Met Val Glu Leu Leu Asp Gly
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Tyr Thr His Arg Val Leu Ala Arg Phe His Gly Arg Ser Arg Pro Pro
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Leu Ser Phe Asn Val Ser Leu Asp Phe Val Ile Leu Tyr Phe Phe Ser
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Asp Arg Ile Asn Gln Ala Gln Gly Phe Ala Val Leu Tyr Gln Ala Val
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Lys Glu Glu Leu Pro Gln Glu Arg Pro Ala Val Asn Gln Thr Val Ala
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Glu Val Ile Thr Glu Gln Ala Asn Leu Ser Val Ser Ala Ala Arg Ser
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Ser Lys Val Leu Tyr Val Ile Thr Thr Ser Pro Ser His Pro Pro Gln
            340   345   350

Thr Val Pro Gly Ser Asn Ser Trp Ala Pro Pro Met Gly Ala Gly Ser
            355   360   365

His Arg Val Glu Gly Trp Thr Val Tyr Gly Leu Ala Thr Leu Leu Ile
            370   375   380

Leu Thr Val Thr Ala Ile Val Ala Lys Ile Leu Leu His Val Thr Phe
385   390   395   400

Lys Ser His Arg Val Pro Ala Ser Gly Asp Leu Arg Asp Cys His Gln
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Pro Gly Thr Ser Gly Glu Ile Trp Ser Ile Phe Tyr Lys Pro Ser Thr

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Gln Gly Gly Lys Pro Cys Leu Phe Trp Asn Glu Thr Phe Gln His Pro
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Tyr Asn Thr Leu Lys Tyr Pro Asn Gly Glu Gly Gly Leu Gly Glu His
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Asn Tyr Cys Arg Asn Pro Asp Gly Asp Val Ser Pro Trp Cys Tyr Val
 65   70   75   80

Ala Glu His Glu Asp Gly Val Tyr Trp Lys Tyr Cys Glu Ile Pro Ala
            85   90   95

Cys Gln Met Pro Gly Asn Leu Gly Cys Tyr Lys Asp His Gly Asn Pro
            100   105   110

Pro Pro Leu Thr Gly Thr Ser Lys Thr Ser Asn Lys Leu Thr Ile Gln
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Thr Cys Ile Ser Phe Cys Arg Ser Gln Arg Phe Lys Phe Ala Gly Met
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Glu Ser Gly Tyr Ala Cys Phe Cys Gly Asn Asn Pro Asp Tyr Trp Lys
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Tyr Gly Glu Ala Ala Ser Thr Glu Cys Asn Ser Val Cys Phe Gly Asp
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7

His Thr Gln Pro Cys Gly Gly Asp Gly Arg Ile Ile Leu Phe Asp Thr
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Leu Val Gly Ala Cys Gly Gly Asn Tyr Ser Ala Met Ser Ser Val Val
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Tyr Ser Pro Asp Phe Pro Asp Thr Tyr Ala Thr Gly Arg Val Cys Tyr
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Trp Thr Ile Arg Val Pro Gly Ala Ser His Ile His Phe Ser Phe Pro
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Leu Phe Asp Ile Arg Asp Ser Ala Asp Met Val Glu Leu Leu Asp Gly
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Tyr Thr His Arg Val Leu Ala Arg Phe His Gly Arg Ser Arg Pro Pro
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Leu Ser Phe Asn Val Ser Leu Asp Phe Val Ile Leu Tyr Phe Phe Ser
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Asp Arg Ile Asn Gln Ala Gln Gly Phe Ala Val Leu Tyr Gln Ala Val
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Lys Glu Glu Leu Pro Gln Glu Arg Pro Ala Val Asn Gln Thr Val Ala
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Glu Val Ile Thr Glu Gln Ala Asn Leu Ser Val Ser Ala Ala Arg Ser
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Ser Lys Val Leu Tyr Val Ile Thr Thr Ser Pro Ser His Pro Pro Gln
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11

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<210> 11
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12

<211> 1453
<212> PRT
<213> Homo sapiens

<400> 11
Met Met Leu Pro Gln Asn Ser Trp His Ile Asp Phe Gly Arg Cys Cys
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Cys His Gln Asn Leu Phe Ser Ala Val Val Thr Cys Ile Leu Leu Leu
                20   25   30

Asn Ser Cys Phe Leu Ile Ser Ser Phe Asn Gly Thr Asp Leu Glu Leu
            35   40   45

Arg Leu Val Asn Gly Asp Gly Pro Cys Ser Gly Thr Val Glu Val Lys
        50   55   60

Phe Gln Gly Gln Trp Gly Thr Val Cys Asp Asp Gly Trp Asn Thr Thr
65   70   75   80

Ala Ser Thr Val Val Cys Lys Gln Leu Gly Cys Pro Phe Ser Phe Ala
                85   90   95

Met Phe Arg Phe Gly Gln Ala Val Thr Arg His Gly Lys Ile Trp Leu
                100   105   110

Asp Asp Val Ser Cys Tyr Gly Asn Glu Ser Ala Leu Trp Glu Cys Gln
            115   120   125

His Arg Glu Trp Gly Ser His Asn Cys Tyr His Gly Glu Asp Val Gly
        130   135   140

Val Asn Cys Tyr Gly Glu Ala Asn Leu Gly Leu Arg Leu Val Asp Gly
145   150   155   160

Asn Asn Ser Cys Ser Gly Arg Val Glu Val Lys Phe Gln Glu Arg Trp
                165   170   175

Gly Thr Ile Cys Asp Asp Gly Trp Asn Leu Asn Thr Ala Ala Val Val
                180   185   190

Cys Arg Gln Leu Gly Cys Pro Ser Ser Phe Ile Ser Ser Gly Val Val
            195   200   205

Asn Ser Pro Ala Val Leu Arg Pro Ile Trp Leu Asp Asp Ile Leu Cys
    210   215   220

Gln Gly Asn Glu Leu Ala Leu Trp Asn Cys Arg His Arg Gly Trp Gly

13

Asn His Asp Cys Ser His Asn Glu Asp Val Thr Leu Thr Cys Tyr Asp
            245   250   255

Ser Ser Asp Leu Glu Leu Arg Leu Val Gly Gly Thr Asn Arg Cys Met
            260   265   270

Gly Arg Val Glu Leu Lys Ile Gln Gly Arg Trp Gly Thr Val Cys His
            275   280   285

His Lys Trp Asn Asn Ala Ala Ala Asp Val Val Cys Lys Gln Leu Gly
            290   295   300

Cys Gly Thr Ala Leu His Phe Ala Gly Leu Pro His Leu Gln Ser Gly
305   310   315   320

Ser Asp Val Val Trp Leu Asp Gly Val Ser Cys Ser Gly Asn Glu Ser
            325   330   335

Phe Leu Trp Asp Cys Arg His Ser Gly Thr Val Asn Phe Asp Cys Leu
            340   345   350

His Gln Asn Asp Val Ser Val Ile Cys Ser Asp Gly Ala Asp Leu Glu
            355   360   365

Leu Arg Leu Ala Asp Gly Ser Asn Asn Cys Ser Gly Arg Val Glu Val
            370   375   380

Arg Ile His Glu Gln Trp Trp Thr Ile Cys Asp Gln Asn Trp Lys Asn
385   390   395   400

Glu Gln Ala Leu Val Val Cys Lys Gln Leu Gly Cys Pro Phe Ser Val
            405   410   415

Phe Gly Ser Arg Arg Ala Lys Pro Ser Asn Glu Ala Arg Asp Ile Trp
            420   425   430

Ile Asn Ser Ile Ser Cys Thr Gly Asn Glu Ser Ala Leu Trp Asp Cys
            435   440   445

Thr Tyr Asp Gly Lys Ala Lys Arg Thr Cys Phe Arg Arg Ser Asp Ala
            450   455   460

Gly Val Ile Cys Ser Asp Lys Ala Asp Leu Asp Leu Arg Leu Val Gly
465   470   475   480

Ala His Ser Pro Cys Tyr Gly Arg Leu Glu Val Lys Tyr Gln Gly Glu

14

Trp Gly Thr Val Cys His Asp Arg Trp Ser Thr Arg Asn Ala Ala Val
            500   505   510

Val Cys Lys Gln Leu Gly Cys Gly Lys Pro Met His Val Phe Gly Met
            515   520   525

Thr Tyr Phe Lys Glu Ala Ser Gly Pro Ile Trp Leu Asp Asp Val Ser
        530   535   540

Cys Ile Gly Asn Glu Ser Asn Ile Trp Asp Cys Glu His Ser Gly Trp
545   550   555   560

Gly Lys His Asn Cys Val His Arg Glu Asp Val Ile Val Thr Cys Ser
                565   570   575

Gly Asp Ala Thr Trp Gly Leu Arg Leu Val Gly Gly Ser Asn Arg Cys
            580   585   590

Ser Gly Arg Leu Glu Val Tyr Phe Gln Gly Arg Trp Gly Thr Val Cys
        595   600   605

Asp Asp Gly Trp Asn Ser Lys Ala Ala Ala Val Val Cys Ser Gln Leu
    610   615   620

Asp Cys Pro Ser Ser Ile Ile Gly Met Gly Leu Gly Asn Ala Ser Thr
625   630   635   640

Gly Tyr Gly Lys Ile Trp Leu Asp Asp Val Ser Cys Asp Gly Asp Glu
            645   650   655

Ser Asp Leu Trp Ser Cys Arg Asn Ser Gly Trp Gly Asn Asn Asp Cys
            660   665   670

Ser His Ser Glu Asp Val Gly Val Ile Cys Ser Asp Ala Ser Asp Met
        675   680   685

Glu Leu Arg Leu Val Gly Gly Ser Ser Arg Cys Ala Gly Lys Val Glu
        690   695   700

Val Asn Val Gln Gly Ala Val Gly Ile Leu Cys Ala Asn Gly Trp Gly
705   710   715   720

Met Asn Ile Ala Glu Val Val Cys Arg Gln Leu Glu Cys Gly Ser Ala
                725   730   735

Ile Arg Val Ser Arg Glu Pro His Phe Thr Glu Arg Thr Leu His Ile

Leu Met Ser Asn Ser Gly Cys Thr Gly Gly Glu Ala Ser Leu Trp Asp
        755   760   765

Cys Ile Arg Trp Glu Trp Lys Gln Thr Ala Cys His Leu Asn Met Glu
    770   775   780

Ala Ser Leu Ile Cys Ser Ala His Arg Gln Pro Arg Leu Val Gly Ala
785   790   795   800

Asp Met Pro Cys Ser Gly Arg Val Glu Val Lys His Ala Asp Thr Trp
            805   810   815

Arg Ser Val Cys Asp Ser Asp Phe Ser Leu His Ala Ala Asn Val Leu
            820   825   830

Cys Arg Glu Leu Asn Cys Gly Asp Ala Ile Ser Leu Ser Val Gly Asp
        835   840   845

His Phe Gly Lys Gly Asn Gly Leu Thr Trp Ala Glu Lys Phe Gln Cys
    850   855   860

Glu Gly Ser Glu Thr His Leu Ala Leu Cys Pro Ile Val Gln His Pro
865   870   875   880

Glu Asp Thr Cys Ile His Ser Arg Glu Val Gly Val Val Cys Ser Arg
            885   890   895

Tyr Thr Asp Val Arg Leu Val Asn Gly Lys Ser Gln Cys Asp Gly Gln
            900   905   910

Val Glu Ile Asn Val Leu Gly His Trp Gly Ser Leu Cys Asp Thr His
    915   920   925

Trp Asp Pro Glu Asp Ala Arg Val Leu Cys Arg Gln Leu Ser Cys Gly
    930   935   940

Thr Ala Leu Ser Thr Thr Gly Gly Lys Tyr Ile Gly Glu Arg Ser Val
945   950   955   960

Arg Val Trp Gly His Arg Phe His Cys Leu Gly Asn Glu Ser Leu Leu
            965   970   975

Asp Asn Cys Gln Met Thr Val Leu Gly Ala Pro Pro Cys Ile His Gly
        980   985   990

Asn Thr Val Ser Val Ile Cys Thr Gly Ser Leu Thr Gln Pro Leu Phe

16

Pro Cys Leu Ala Asn Val Ser Asp Pro Tyr Leu Ser Ala Val Pro Glu
   1010   1015   1020

Gly Ser Ala Leu Ile Cys Leu Glu Asp Lys Arg Leu Arg Leu Val Asp
1025   1030   1035   1040

Gly Asp Ser Arg Cys Ala Gly Arg Val Glu Ile Tyr His Asp Gly Phe
      1045   1050   1055

Trp Gly Thr Ile Cys Asp Asp Gly Trp Asp Leu Ser Asp Ala His Val
     1060   1065   1070

Val Cys Gln Lys Leu Gly Cys Gly Val Ala Phe Asn Ala Thr Val Ser
    1075   1080   1085

Ala His Phe Gly Glu Gly Ser Gly Pro Ile Trp Leu Asp Asp Leu Asn
   1090   1095   1100

Cys Thr Gly Thr Glu Ser His Leu Trp Gln Cys Pro Ser Arg Gly Trp
1105   1110   1115   1120

Gly Gln His Asp Cys Arg His Lys Glu Asp Ala Gly Val Ile Cys Ser
     1125   1130   1135

Glu Phe Thr Ala Leu Arg Leu Tyr Ser Glu Thr Glu Thr Glu Ser Cys
    1140   1145   1150

Ala Gly Arg Leu Glu Val Phe Tyr Asn Gly Thr Trp Gly Ser Val Gly
   1155   1160   1165

Arg Arg Asn Ile Thr Thr Ala Ile Ala Gly Ile Val Cys Arg Gln Leu
  1170   1175   1180

Gly Cys Gly Glu Asn Gly Val Val Ser Leu Ala Pro Leu Ser Lys Thr
1185   1190   1195   1200

Gly Ser Gly Phe Met Trp Val Asp Asp Ile Gln Cys Pro Lys Thr His
    1205   1210   1215

Ile Ser Ile Trp Gln Cys Leu Ser Ala Pro Trp Glu Arg Arg Ile Ser
   1220   1225   1230

Ser Pro Ala Glu Glu Thr Trp Ile Thr Cys Glu Asp Arg Ile Arg Val
  1235   1240   1245

Arg Gly Gly Asp Thr Glu Cys Ser Gly Arg Val Glu Ile Trp His Ala

Gly Ser Trp Gly Thr Val Cys Asp Asp Ser Trp Asp Leu Ala Glu Ala
1265   1270   1275   1280

Glu Val Val Cys Gln Gln Leu Gly Cys Gly Ser Ala Leu Ala Ala Leu
                   1285   1290   1295

Arg Asp Ala Ser Phe Gly Gln Gly Thr Gly Thr Ile Trp Leu Asp Asp
                  1300   1305   1310

Met Arg Cys Lys Gly Asn Glu Ser Phe Leu Trp Asp Cys His Ala Lys
                  1315   1320   1325

Pro Trp Gly Gln Ser Asp Cys Gly His Lys Glu Asp Ala Gly Val Arg
                  1330   1335   1340

Cys Ser Gly Gln Ser Leu Lys Ser Leu Asn Ala Ser Ser Gly His Leu
1345   1350   1355   1360

Ala Leu Ile Leu Ser Ser Ile Phe Gly Leu Leu Leu Leu Val Leu Phe
                  1365   1370   1375

Ile Leu Phe Leu Thr Trp Cys Arg Val Gln Lys Gln Lys His Leu Pro
                  1380   1385   1390

Leu Arg Val Ser Thr Arg Arg Arg Gly Ser Leu Glu Glu Asn Leu Phe
                  1395   1400   1405

His Glu Met Glu Thr Cys Leu Lys Arg Glu Asp Pro His Gly Thr Arg
                  1410   1415   1420

Thr Ser Asp Asp Thr Pro Asn His Gly Cys Glu Asp Ala Ser Asp Thr
1425   1430   1435   1440

Ser Leu Leu Gly Val Leu Pro Ala Ser Glu Ala Thr Lys
                  1445   1450

<210> 12
<211> 40
<212> PRT
<213> Homo sapiens

<400> 12
Met Met Leu Pro Gln Asn Ser Trp His Ile Asp Phe Gly Arg Cys Cys
  1   5   10   15

Cys His Gln Asn Leu Phe Ser Ala Val Val Thr Cys Ile Leu Leu Leu
                20   25   30

Asn Ser Cys Phe Leu Ile Ser Ser
            35   40

<210> 13
<211> 1413
<212> PRT
<213> Homo sapiens

<400> 13
Phe Asn Gly Thr Asp Leu Glu Leu Arg Leu Val Asn Gly Asp Gly Pro
  1   5   10   15

Cys Ser Gly Thr Val Glu Val Lys Phe Gln Gly Gln Trp Gly Thr Val
                20   25   30

Cys Asp Asp Gly Trp Asn Thr Thr Ala Ser Thr Val Val Cys Lys Gln
                35   40   45

Leu Gly Cys Pro Phe Ser Phe Ala Met Phe Arg Phe Gly Gln Ala Val
        50   55   60

Thr Arg His Gly Lys Ile Trp Leu Asp Asp Val Ser Cys Tyr Gly Asn
 65   70   75   80

Glu Ser Ala Leu Trp Glu Cys Gln His Arg Glu Trp Gly Ser His Asn
                    85   90   95

Cys Tyr His Gly Glu Asp Val Gly Val Asn Cys Tyr Gly Glu Ala Asn
                100   105   110

Leu Gly Leu Arg Leu Val Asp Gly Asn Asn Ser Cys Ser Gly Arg Val
            115   120   125

Glu Val Lys Phe Gln Glu Arg Trp Gly Thr Ile Cys Asp Asp Gly Trp
        130   135   140

Asn Leu Asn Thr Ala Ala Val Val Cys Arg Gln Leu Gly Cys Pro Ser
145   150   155   160

Ser Phe Ile Ser Ser Gly Val Val Asn Ser Pro Ala Val Leu Arg Pro
                165   170   175

Ile Trp Leu Asp Asp Ile Leu Cys Gln Gly Asn Glu Leu Ala Leu Trp
                180   185   190

19

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Asn Cys Arg His Arg Gly Trp Gly Asn His Asp Cys Ser His Asn Glu
        195                 200                 205

Asp Val Thr Leu Thr Cys Tyr Asp Ser Ser Asp Leu Glu Leu Arg Leu
        210                 215                 220

Val Gly Gly Thr Asn Arg Cys Met Gly Arg Val Glu Leu Lys Ile Gln
225                 230                 235                 240

Gly Arg Trp Gly Thr Val Cys His His Lys Trp Asn Asn Ala Ala Ala
                245                 250                 255

Asp Val Val Cys Lys Gln Leu Gly Cys Gly Thr Ala Leu His Phe Ala
                260                 265                 270

Gly Leu Pro His Leu Gln Ser Gly Ser Asp Val Val Trp Leu Asp Gly
        275                 280                 285

Val Ser Cys Ser Gly Asn Glu Ser Phe Leu Trp Asp Cys Arg His Ser
290                 295                 300

Gly Thr Val Asn Phe Asp Cys Leu His Gln Asn Asp Val Ser Val Ile
305                 310                 315                 320

Cys Ser Asp Gly Ala Asp Leu Glu Leu Arg Leu Ala Asp Gly Ser Asn
                325                 330                 335

Asn Cys Ser Gly Arg Val Glu Val Arg Ile His Glu Gln Trp Trp Thr
                340                 345                 350

Ile Cys Asp Gln Asn Trp Lys Asn Glu Gln Ala Leu Val Val Cys Lys
        355                 360                 365

Gln Leu Gly Cys Pro Phe Ser Val Phe Gly Ser Arg Arg Ala Lys Pro
370                 375                 380

Ser Asn Glu Ala Arg Asp Ile Trp Ile Asn Ser Ile Ser Cys Thr Gly
385                 390                 395                 400

Asn Glu Ser Ala Leu Trp Asp Cys Thr Tyr Asp Gly Lys Ala Lys Arg
                405                 410                 415

Thr Cys Phe Arg Arg Ser Asp Ala Gly Val Ile Cys Ser Asp Lys Ala
                420                 425                 430

Asp Leu Asp Leu Arg Leu Val Gly Ala His Ser Pro Cys Tyr Gly Arg
        435                 440                 445
```

20

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Leu Glu Val Lys Tyr Gln Gly Glu Trp Gly Thr Val Cys His Asp Arg
    450                 455                 460

Trp Ser Thr Arg Asn Ala Ala Val Val Cys Lys Gln Leu Gly Cys Gly
465                 470                 475                 480

Lys Pro Met His Val Phe Gly Met Thr Tyr Phe Lys Glu Ala Ser Gly
                485                 490                 495

Pro Ile Trp Leu Asp Asp Val Ser Cys Ile Gly Asn Glu Ser Asn Ile
            500                 505                 510

Trp Asp Cys Glu His Ser Gly Trp Gly Lys His Asn Cys Val His Arg
        515                 520                 525

Glu Asp Val Ile Val Thr Cys Ser Gly Asp Ala Thr Trp Gly Leu Arg
    530                 535                 540

Leu Val Gly Gly Ser Asn Arg Cys Ser Gly Arg Leu Glu Val Tyr Phe
545                 550                 555                 560

Gln Gly Arg Trp Gly Thr Val Cys Asp Asp Gly Trp Asn Ser Lys Ala
            565                 570                 575

Ala Ala Val Val Cys Ser Gln Leu Asp Cys Pro Ser Ser Ile Ile Gly
            580                 585                 590

Met Gly Leu Gly Asn Ala Ser Thr Gly Tyr Gly Lys Ile Trp Leu Asp
        595                 600                 605

Asp Val Ser Cys Asp Gly Asp Glu Ser Asp Leu Trp Ser Cys Arg Asn
    610                 615                 620

Ser Gly Trp Gly Asn Asn Asp Cys Ser His Ser Glu Asp Val Gly Val
625                 630                 635                 640

Ile Cys Ser Asp Ala Ser Asp Met Glu Leu Arg Leu Val Gly Gly Ser
            645                 650                 655

Ser Arg Cys Ala Gly Lys Val Glu Val Asn Val Gln Gly Ala Val Gly
            660                 665                 670

Ile Leu Cys Ala Asn Gly Trp Gly Met Asn Ile Ala Glu Val Val Cys
        675                 680                 685

Arg Gln Leu Glu Cys Gly Ser Ala Ile Arg Val Ser Arg Glu Pro His
    690                 695                 700
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21

Phe Thr Glu Arg Thr Leu His Ile Leu Met Ser Asn Ser Gly Cys Thr
705   710   715   720

Gly Gly Glu Ala Ser Leu Trp Asp Cys Ile Arg Trp Glu Trp Lys Gln
                725   730   735

Thr Ala Cys His Leu Asn Met Glu Ala Ser Leu Ile Cys Ser Ala His
            740   745   750

Arg Gln Pro Arg Leu Val Gly Ala Asp Met Pro Cys Ser Gly Arg Val
            755   760   765

Glu Val Lys His Ala Asp Thr Trp Arg Ser Val Cys Asp Ser Asp Phe
    770   775   780

Ser Leu His Ala Ala Asn Val Leu Cys Arg Glu Leu Asn Cys Gly Asp
785   790   795   800

Ala Ile Ser Leu Ser Val Gly Asp His Phe Gly Lys Gly Asn Gly Leu
            805   810   815

Thr Trp Ala Glu Lys Phe Gln Cys Glu Gly Ser Glu Thr His Leu Ala
            820   825   830

Leu Cys Pro Ile Val Gln His Pro Glu Asp Thr Cys Ile His Ser Arg
            835   840   845

Glu Val Gly Val Val Cys Ser Arg Tyr Thr Asp Val Arg Leu Val Asn
    850   855   860

Gly Lys Ser Gln Cys Asp Gly Gln Val Glu Ile Asn Val Leu Gly His
865   870   875   880

Trp Gly Ser Leu Cys Asp Thr His Trp Asp Pro Glu Asp Ala Arg Val
            885   890   895

Leu Cys Arg Gln Leu Ser Cys Gly Thr Ala Leu Ser Thr Thr Gly Gly
            900   905   910

Lys Tyr Ile Gly Glu Arg Ser Val Arg Val Trp Gly His Arg Phe His
            915   920   925

Cys Leu Gly Asn Glu Ser Leu Leu Asp Asn Cys Gln Met Thr Val Leu
    930   935   940

Gly Ala Pro Pro Cys Ile His Gly Asn Thr Val Ser Val Ile Cys Thr
945   950   955   960

22

Gly Ser Leu Thr Gln Pro Leu Phe Pro Cys Leu Ala Asn Val Ser Asp
          965   970   975

Pro Tyr Leu Ser Ala Val Pro Glu Gly Ser Ala Leu Ile Cys Leu Glu
          980   985   990

Asp Lys Arg Leu Arg Leu Val Asp Gly Asp Ser Arg Cys Ala Gly Arg
          995   1000   1005

Val Glu Ile Tyr His Asp Gly Phe Trp Gly Thr Ile Cys Asp Asp Gly
     1010   1015   1020

Trp Asp Leu Ser Asp Ala His Val Val Cys Gln Lys Leu Gly Cys Gly
1025   1030   1035   1040

Val Ala Phe Asn Ala Thr Val Ser Ala His Phe Gly Glu Gly Ser Gly
          1045   1050   1055

Pro Ile Trp Leu Asp Asp Leu Asn Cys Thr Gly Thr Glu Ser His Leu
          1060   1065   1070

Trp Gln Cys Pro Ser Arg Gly Trp Gly Gln His Asp Cys Arg His Lys
          1075   1080   1085

Glu Asp Ala Gly Val Ile Cys Ser Glu Phe Thr Ala Leu Arg Leu Tyr
          1090   1095   1100

Ser Glu Thr Glu Thr Glu Ser Cys Ala Gly Arg Leu Glu Val Phe Tyr
1105   1110   1115   1120

Asn Gly Thr Trp Gly Ser Val Gly Arg Arg Asn Ile Thr Thr Ala Ile
          1125   1130   1135

Ala Gly Ile Val Cys Arg Gln Leu Gly Cys Gly Glu Asn Gly Val Val
          1140   1145   1150

Ser Leu Ala Pro Leu Ser Lys Thr Gly Ser Gly Phe Met Trp Val Asp
          1155   1160   1165

Asp Ile Gln Cys Pro Lys Thr His Ile Ser Ile Trp Gln Cys Leu Ser
     1170   1175   1180

Ala Pro Trp Glu Arg Arg Ile Ser Ser Pro Ala Glu Glu Thr Trp Ile
1185   1190   1195   1200

Thr Cys Glu Asp Arg Ile Arg Val Arg Gly Gly Asp Thr Glu Cys Ser
          1205   1210   1215

23

Gly Arg Val Glu Ile Trp His Ala Gly Ser Trp Gly Thr Val Cys Asp
        1220   1225   1230

Asp Ser Trp Asp Leu Ala Glu Ala Glu Val Val Cys Gln Gln Leu Gly
        1235   1240   1245

Cys Gly Ser Ala Leu Ala Ala Leu Arg Asp Ala Ser Phe Gly Gln Gly
        1250   1255   1260

Thr Gly Thr Ile Trp Leu Asp Asp Met Arg Cys Lys Gly Asn Glu Ser
1265   1270   1275   1280

Phe Leu Trp Asp Cys His Ala Lys Pro Trp Gly Gln Ser Asp Cys Gly
            1285   1290   1295

His Lys Glu Asp Ala Gly Val Arg Cys Ser Gly Gln Ser Leu Lys Ser
        1300   1305   1310

Leu Asn Ala Ser Ser Gly His Leu Ala Leu Ile Leu Ser Ser Ile Phe
        1315   1320   1325

Gly Leu Leu Leu Leu Val Leu Phe Ile Leu Phe Leu Thr Trp Cys Arg
        1330   1335   1340

Val Gln Lys Gln Lys His Leu Pro Leu Arg Val Ser Thr Arg Arg Arg
1345   1350   1355   1360

Gly Ser Leu Glu Glu Asn Leu Phe His Glu Met Glu Thr Cys Leu Lys
            1365   1370   1375

Arg Glu Asp Pro His Gly Thr Arg Thr Ser Asp Asp Thr Pro Asn His
            1380   1385   1390

Gly Cys Glu Asp Ala Ser Asp Thr Ser Leu Leu Gly Val Leu Pro Ala
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Ser Glu Ala Thr Lys
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<213> Homo sapiens

<400> 14
Phe Asn Gly Thr Asp Leu Glu Leu Arg Leu Val Asn Gly Asp Gly Pro

24

Cys Ser Gly Thr Val Glu Val Lys Phe Gln Gly Gln Trp Gly Thr Val
      20   25   30

Cys Asp Asp Gly Trp Asn Thr Thr Ala Ser Thr Val Val Cys Lys Gln
           35   40   45

Leu Gly Cys Pro Phe Ser Phe Ala Met Phe Arg Phe Gly Gln Ala Val
    50   55   60

Thr Arg His Gly Lys Ile Trp Leu Asp Asp Val Ser Cys Tyr Gly Asn
65   70   75   80

Glu Ser Ala Leu Trp Glu Cys Gln His Arg Glu Trp Gly Ser His Asn
               85   90   95

Cys Tyr His Gly Glu Asp Val Gly Val Asn Cys Tyr Gly Glu Ala Asn
           100   105   110

Leu Gly Leu Arg Leu Val Asp Gly Asn Asn Ser Cys Ser Gly Arg Val
           115   120   125

Glu Val Lys Phe Gln Glu Arg Trp Gly Thr Ile Cys Asp Asp Gly Trp
           130   135   140

Asn Leu Asn Thr Ala Ala Val Val Cys Arg Gln Leu Gly Cys Pro Ser
145   150   155   160

Ser Phe Ile Ser Ser Gly Val Val Asn Ser Pro Ala Val Leu Arg Pro
               165   170   175

Ile Trp Leu Asp Asp Ile Leu Cys Gln Gly Asn Glu Leu Ala Leu Trp
           180   185   190

Asn Cys Arg His Arg Gly Trp Gly Asn His Asp Cys Ser His Asn Glu
           195   200   205

Asp Val Thr Leu Thr Cys Tyr Asp Ser Ser Asp Leu Glu Leu Arg Leu
           210   215   220

Val Gly Gly Thr Asn Arg Cys Met Gly Arg Val Glu Leu Lys Ile Gln
225   230   235   240

Gly Arg Trp Gly Thr Val Cys His His Lys Trp Asn Asn Ala Ala Ala
           245   250   255

Asp Val Val Cys Lys Gln Leu Gly Cys Gly Thr Ala Leu His Phe Ala

Gly Leu Pro His Leu Gln Ser Gly Ser Asp Val Val Trp Leu Asp Gly
        275   280   285

Val Ser Cys Ser Gly Asn Glu Ser Phe Leu Trp Asp Cys Arg His Ser
        290   295   300

Gly Thr Val Asn Phe Asp Cys Leu His Gln Asn Asp Val Ser Val Ile
305   310   315   320

Cys Ser Asp Gly Ala Asp Leu Glu Leu Arg Leu Ala Asp Gly Ser Asn
                325   330   335

Asn Cys Ser Gly Arg Val Glu Val Arg Ile His Glu Gln Trp Trp Thr
            340   345   350

Ile Cys Asp Gln Asn Trp Lys Asn Glu Gln Ala Leu Val Val Cys Lys
        355   360   365

Gln Leu Gly Cys Pro Phe Ser Val Phe Gly Ser Arg Arg Ala Lys Pro
    370   375   380

Ser Asn Glu Ala Arg Asp Ile Trp Ile Asn Ser Ile Ser Cys Thr Gly
385   390   395   400

Asn Glu Ser Ala Leu Trp Asp Cys Thr Tyr Asp Gly Lys Ala Lys Arg
                405   410   415

Thr Cys Phe Arg Arg Ser Asp Ala Gly Val Ile Cys Ser Asp Lys Ala
            420   425   430

Asp Leu Asp Leu Arg Leu Val Gly Ala His Ser Pro Cys Tyr Gly Arg
        435   440   445

Leu Glu Val Lys Tyr Gln Gly Glu Trp Gly Thr Val Cys His Asp Arg
    450   455   460

Trp Ser Thr Arg Asn Ala Ala Val Val Cys Lys Gln Leu Gly Cys Gly
465   470   475   480

Lys Pro Met His Val Phe Gly Met Thr Tyr Phe Lys Glu Ala Ser Gly
            485   490   495

Pro Ile Trp Leu Asp Asp Val Ser Cys Ile Gly Asn Glu Ser Asn Ile
        500   505   510

Trp Asp Cys Glu His Ser Gly Trp Gly Lys His Asn Cys Val His Arg

26

Glu Asp Val Ile Val Thr Cys Ser Gly Asp Ala Thr Trp Gly Leu Arg
    530   535   540

Leu Val Gly Gly Ser Asn Arg Cys Ser Gly Arg Leu Glu Val Tyr Phe
545   550   555   560

Gln Gly Arg Trp Gly Thr Val Cys Asp Asp Gly Trp Asn Ser Lys Ala
            565   570   575

Ala Ala Val Val Cys Ser Gln Leu Asp Cys Pro Ser Ser Ile Ile Gly
        580   585   590

Met Gly Leu Gly Asn Ala Ser Thr Gly Tyr Gly Lys Ile Trp Leu Asp
    595   600   605

Asp Val Ser Cys Asp Gly Asp Glu Ser Asp Leu Trp Ser Cys Arg Asn
    610   615   620

Ser Gly Trp Gly Asn Asn Asp Cys Ser His Ser Glu Asp Val Gly Val
625   630   635   640

Ile Cys Ser Asp Ala Ser Asp Met Glu Leu Arg Leu Val Gly Gly Ser
        645   650   655

Ser Arg Cys Ala Gly Lys Val Glu Val Asn Val Gln Gly Ala Val Gly
        660   665   670

Ile Leu Cys Ala Asn Gly Trp Gly Met Asn Ile Ala Glu Val Val Cys
    675   680   685

Arg Gln Leu Glu Cys Gly Ser Ala Ile Arg Val Ser Arg Glu Pro His
    690   695   700

Phe Thr Glu Arg Thr Leu His Ile Leu Met Ser Asn Ser Gly Cys Thr
705   710   715   720

Gly Gly Glu Ala Ser Leu Trp Asp Cys Ile Arg Trp Glu Trp Lys Gln
        725   730   735

Thr Ala Cys His Leu Asn Met Glu Ala Ser Leu Ile Cys Ser Ala His
        740   745   750

Arg Gln Pro Arg Leu Val Gly Ala Asp Met Pro Cys Ser Gly Arg Val
    755   760   765

Glu Val Lys His Ala Asp Thr Trp Arg Ser Val Cys Asp Ser Asp Phe

27

Ser Leu His Ala Ala Asn Val Leu Cys Arg Glu Leu Asn Cys Gly Asp
785   790   795   800

Ala Ile Ser Leu Ser Val Gly Asp His Phe Gly Lys Gly Asn Gly Leu
                805   810   815

Thr Trp Ala Glu Lys Phe Gln Cys Glu Gly Ser Glu Thr His Leu Ala
            820   825   830

Leu Cys Pro Ile Val Gln His Pro Glu Asp Thr Cys Ile His Ser Arg
        835   840   845

Glu Val Gly Val Val Cys Ser Arg Tyr Thr Asp Val Arg Leu Val Asn
    850   855   860

Gly Lys Ser Gln Cys Asp Gly Gln Val Glu Ile Asn Val Leu Gly His
865   870   875   880

Trp Gly Ser Leu Cys Asp Thr His Trp Asp Pro Glu Asp Ala Arg Val
            885   890   895

Leu Cys Arg Gln Leu Ser Cys Gly Thr Ala Leu Ser Thr Thr Gly Gly
        900   905   910

Lys Tyr Ile Gly Glu Arg Ser Val Arg Val Trp Gly His Arg Phe His
        915   920   925

Cys Leu Gly Asn Glu Ser Leu Leu Asp Asn Cys Gln Met Thr Val Leu
    930   935   940

Gly Ala Pro Pro Cys Ile His Gly Asn Thr Val Ser Val Ile Cys Thr
945   950   955   960

Gly Ser Leu Thr Gln Pro Leu Phe Pro Cys Leu Ala Asn Val Ser Asp
            965   970   975

Pro Tyr Leu Ser Ala Val Pro Glu Gly Ser Ala Leu Ile Cys Leu Glu
        980   985   990

Asp Lys Arg Leu Arg Leu Val Asp Gly Asp Ser Arg Cys Ala Gly Arg
        995   1000   1005

Val Glu Ile Tyr His Asp Gly Phe Trp Gly Thr Ile Cys Asp Asp Gly
    1010   1015   1020

Trp Asp Leu Ser Asp Ala His Val Val Cys Gln Lys Leu Gly Cys Gly

28

Val Ala Phe Asn Ala Thr Val Ser Ala His Phe Gly Glu Gly Ser Gly
                    1045   1050   1055

Pro Ile Trp Leu Asp Asp Leu Asn Cys Thr Gly Thr Glu Ser His Leu
                1060   1065   1070

Trp Gln Cys Pro Ser Arg Gly Trp Gly Gln His Asp Cys Arg His Lys
                1075   1080   1085

Glu Asp Ala Gly Val Ile Cys Ser Glu Phe Thr Ala Leu Arg Leu Tyr
            1090   1095   1100

Ser Glu Thr Glu Thr Glu Ser Cys Ala Gly Arg Leu Glu Val Phe Tyr
        1105   1110   1115   1120

Asn Gly Thr Trp Gly Ser Val Gly Arg Arg Asn Ile Thr Thr Ala Ile
                    1125   1130   1135

Ala Gly Ile Val Cys Arg Gln Leu Gly Cys Gly Glu Asn Gly Val Val
                1140   1145   1150

Ser Leu Ala Pro Leu Ser Lys Thr Gly Ser Gly Phe Met Trp Val Asp
            1155   1160   1165

Asp Ile Gln Cys Pro Lys Thr His Ile Ser Ile Trp Gln Cys Leu Ser
        1170   1175   1180

Ala Pro Trp Glu Arg Arg Ile Ser Ser Pro Ala Glu Glu Thr Trp Ile
        1185   1190   1195   1200

Thr Cys Glu Asp Arg Ile Arg Val Arg Gly Gly Asp Thr Glu Cys Ser
                1205   1210   1215

Gly Arg Val Glu Ile Trp His Ala Gly Ser Trp Gly Thr Val Cys Asp
            1220   1225   1230

Asp Ser Trp Asp Leu Ala Glu Ala Glu Val Val Cys Gln Gln Leu Gly
            1235   1240   1245

Cys Gly Ser Ala Leu Ala Ala Leu Arg Asp Ala Ser Phe Gly Gln Gly
        1250   1255   1260

Thr Gly Thr Ile Trp Leu Asp Asp Met Arg Cys Lys Gly Asn Glu Ser
    1265   1270   1275   1280

Phe Leu Trp Asp Cys His Ala Lys Pro Trp Gly Gln Ser Asp Cys Gly

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<212> PRT
<213> Homo sapiens

<400> 15
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Arg Gly Ser Leu Glu Glu Asn Leu Phe His Glu Met Glu Thr Cys Leu
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Lys Arg Glu Asp Pro His Gly Thr Arg Thr Ser Asp Asp Thr Pro Asn
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His Gly Cys Glu Asp Ala Ser Asp Thr Ser Leu Leu Gly Val Leu Pro
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Ala Ser Glu Ala Thr Lys
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<400> 17

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31

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<211> 2283
<212> DNA
<213> Homo sapiens

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<212> PRT
<213> Homo sapiens

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            20                  25                  30

Gly Gly Gly Gln Gly Pro Met Pro Arg Val Arg Tyr Tyr Ala Gly Asp
        35                  40                  45

Glu Arg Arg Ala Leu Ser Phe Phe His Gln Lys Gly Leu Gln Asp Phe
    50                  55                  60

Asp Thr Leu Leu Leu Ser Gly Asp Gly Asn Thr Leu Tyr Val Gly Ala
65                  70                  75                  80

Arg Glu Ala Ile Leu Ala Leu Asp Ile Gln Asp Pro Gly Val Pro Arg
                85                  90                  95

Leu Lys Asn Met Ile Pro Trp Pro Ala Ser Asp Arg Lys Lys Ser Glu
                100                 105                 110

Cys Ala Phe Lys Lys Lys Ser Asn Glu Thr Gln Cys Phe Asn Phe Ile
            115                 120                 125

Arg Val Leu Val Ser Tyr Asn Val Thr His Leu Tyr Thr Cys Gly Thr
    130                 135                 140

Phe Ala Phe Ser Pro Ala Cys Thr Phe Ile Glu Leu Gln Asp Ser Tyr
145                 150                 155                 160

Leu Leu Pro Ile Ser Glu Asp Lys Val Met Glu Gly Lys Gly Gln Ser
                165                 170                 175

Pro Phe Asp Pro Ala His Lys His Thr Ala Val Leu Val Asp Gly Met
                180                 185                 190
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33

Leu Tyr Ser Gly Thr Met Asn Asn Phe Leu Gly Ser Glu Pro Ile Leu
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Met Arg Thr Leu Gly Ser Gln Pro Val Leu Lys Thr Asp Asn Phe Leu
        210   215   220

Arg Trp Leu His His Asp Ala Ser Phe Val Ala Ala Ile Pro Ser Thr
225   230   235   240

Gln Val Val Tyr Phe Phe Phe Glu Glu Thr Ala Ser Glu Phe Asp Phe
                245   250   255

Phe Glu Arg Leu His Thr Ser Arg Val Ala Arg Val Cys Lys Asn Asp
            260   265   270

Val Gly Gly Glu Lys Leu Leu Gln Lys Lys Trp Thr Thr Phe Leu Lys
            275   280   285

Ala Gln Leu Leu Cys Thr Gln Pro Gly Gln Leu Pro Phe Asn Val Ile
        290   295   300

Arg His Ala Val Leu Leu Pro Ala Asp Ser Pro Thr Ala Pro His Ile
305   310   315   320

Tyr Ala Val Phe Thr Ser Gln Trp Gln Val Gly Gly Thr Arg Ser Ser
                325   330   335

Ala Val Cys Ala Phe Ser Leu Leu Asp Ile Glu Arg Val Phe Lys Gly
            340   345   350

Lys Tyr Lys Glu Leu Asn Lys Glu Thr Ser Arg Trp Thr Thr Tyr Arg
        355   360   365

Gly Pro Glu Thr Asn Pro Arg Pro Gly Ser Cys Ser Val Gly Pro Ser
        370   375   380

Ser Asp Lys Ala Leu Thr Phe Met Lys Asp His Phe Leu Met Asp Glu
385   390   395   400

Gln Val Val Gly Thr Pro Leu Leu Val Lys Ser Gly Val Glu Tyr Thr
                405   410   415

Arg Leu Ala Val Glu Thr Ala Gln Gly Leu Asp Gly His Ser His Leu
            420   425   430

Val Met Tyr Leu Gly Thr Thr Thr Gly Ser Leu His Lys Ala Val Val
        435   440   445

34

Ser Gly Asp Ser Ser Ala His Leu Val Glu Glu Ile Gln Leu Phe Pro
    450   455   460

Asp Pro Glu Pro Val Arg Asn Leu Gln Leu Ala Pro Thr Gln Gly Ala
465   470   475   480

Val Phe Val Gly Phe Ser Gly Gly Val Trp Arg Val Pro Arg Ala Asn
                485   490   495

Cys Ser Val Tyr Glu Ser Cys Val Asp Cys Val Leu Ala Arg Asp Pro
                500   505   510

His Cys Ala Trp Asp Pro Glu Ser Arg Thr Cys Cys Leu Leu Ser Ala
            515   520   525

Pro Asn Leu Asn Ser Trp Lys Gln Asp Met Glu Arg Gly Asn Pro Glu
        530   535   540

Trp Ala Cys Ala Ser Gly Pro Met Ser Arg Ser Leu Arg Pro Gln Ser
545   550   555   560

Arg Pro Gln Ile Ile Lys Glu Val Leu Ala Val Pro Asn Ser Ile Leu
                565   570   575

Glu Leu Pro Cys Pro His Leu Ser Ala Leu Ala Ser Tyr Tyr Trp Ser
            580   585   590

His Gly Pro Ala Ala Val Pro Glu Ala Ser Ser Thr Val Tyr Asn Gly
        595   600   605

Ser Leu Leu Leu Ile Val Gln Asp Gly Val Gly Gly Leu Tyr Gln Cys
        610   615   620

Trp Ala Thr Glu Asn Gly Phe Ser Tyr Pro Val Ile Ser Tyr Trp Val
625   630   635   640

Asp Ser Gln Asp Gln Thr Leu Ala Leu Asp Pro Glu Leu Ala Gly Ile
                645   650   655

Pro Arg Glu His Val Lys Val Pro Leu Thr Arg Val Ser Gly Gly Ala
            660   665   670

Ala Leu Ala Ala Gln Gln Ser Tyr Trp Pro His Phe Val Thr Val Thr
        675   680   685

Val Leu Phe Ala Leu Val Leu Ser Gly Ala Leu Ile Ile Leu Val Ala
    690   695   700

35

Ser Pro Leu Arg Ala Leu Arg Ala Arg Gly Lys Val Gln Gly Cys Glu
705   710   715   720

Thr Leu Arg Pro Gly Glu Lys Ala Pro Leu Ser Arg Glu Gln His Leu
                725   730   735

Gln Ser Pro Lys Glu Cys Arg Thr Ser Ala Ser Asp Val Asp Ala Asp
                740   745   750

Asn Asn Cys Leu Gly Thr Glu Val Ala
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<212> PRT
<213> Homo sapiens

<400> 20
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 1   5   10   15

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                20   25   30

<210> 21
<211> 730
<212> PRT
<213> Homo sapiens

<400> 21
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 1   5   10   15

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                20   25   30

Phe Asp Thr Leu Leu Leu Ser Gly Asp Gly Asn Thr Leu Tyr Val Gly
            35   40   45

Ala Arg Glu Ala Ile Leu Ala Leu Asp Ile Gln Asp Pro Gly Val Pro
     50   55   60

Arg Leu Lys Asn Met Ile Pro Trp Pro Ala Ser Asp Arg Lys Lys Ser
 65   70   75   80

36

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Glu Cys Ala Phe Lys Lys Lys Ser Asn Glu Thr Gln Cys Phe Asn Phe
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Ile Arg Val Leu Val Ser Tyr Asn Val Thr His Leu Tyr Thr Cys Gly
                100                 105                 110

Thr Phe Ala Phe Ser Pro Ala Cys Thr Phe Ile Glu Leu Gln Asp Ser
            115                 120                 125

Tyr Leu Leu Pro Ile Ser Glu Asp Lys Val Met Glu Gly Lys Gly Gln
        130                 135                 140

Ser Pro Phe Asp Pro Ala His Lys His Thr Ala Val Leu Val Asp Gly
145                 150                 155                 160

Met Leu Tyr Ser Gly Thr Met Asn Asn Phe Leu Gly Ser Glu Pro Ile
                165                 170                 175

Leu Met Arg Thr Leu Gly Ser Gln Pro Val Leu Lys Thr Asp Asn Phe
                180                 185                 190

Leu Arg Trp Leu His His Asp Ala Ser Phe Val Ala Ala Ile Pro Ser
                195                 200                 205

Thr Gln Val Val Tyr Phe Phe Phe Glu Glu Thr Ala Ser Glu Phe Asp
        210                 215                 220

Phe Phe Glu Arg Leu His Thr Ser Arg Val Ala Arg Val Cys Lys Asn
225                 230                 235                 240

Asp Val Gly Gly Glu Lys Leu Leu Gln Lys Lys Trp Thr Thr Phe Leu
                245                 250                 255

Lys Ala Gln Leu Leu Cys Thr Gln Pro Gly Gln Leu Pro Phe Asn Val
                260                 265                 270

Ile Arg His Ala Val Leu Leu Pro Ala Asp Ser Pro Thr Ala Pro His
                275                 280                 285

Ile Tyr Ala Val Phe Thr Ser Gln Trp Gln Val Gly Gly Thr Arg Ser
        290                 295                 300

Ser Ala Val Cys Ala Phe Ser Leu Leu Asp Ile Glu Arg Val Phe Lys
305                 310                 315                 320

Gly Lys Tyr Lys Glu Leu Asn Lys Glu Thr Ser Arg Trp Thr Thr Tyr
                325                 330                 335
```

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Arg Gly Pro Glu Thr Asn Pro Arg Pro Gly Ser Cys Ser Val Gly Pro
        340                 345             350

Ser Ser Asp Lys Ala Leu Thr Phe Met Lys Asp His Phe Leu Met Asp
        355                 360             365

Glu Gln Val Val Gly Thr Pro Leu Leu Val Lys Ser Gly Val Glu Tyr
        370                 375             380

Thr Arg Leu Ala Val Glu Thr Ala Gln Gly Leu Asp Gly His Ser His
385                 390                 395                 400

Leu Val Met Tyr Leu Gly Thr Thr Thr Gly Ser Leu His Lys Ala Val
                405                 410                 415

Val Ser Gly Asp Ser Ser Ala His Leu Val Glu Glu Ile Gln Leu Phe
                420                 425                 430

Pro Asp Pro Glu Pro Val Arg Asn Leu Gln Leu Ala Pro Thr Gln Gly
        435                 440                 445

Ala Val Phe Val Gly Phe Ser Gly Gly Val Trp Arg Val Pro Arg Ala
        450                 455                 460

Asn Cys Ser Val Tyr Glu Ser Cys Val Asp Cys Val Leu Ala Arg Asp
465                 470                 475                 480

Pro His Cys Ala Trp Asp Pro Glu Ser Arg Thr Cys Cys Leu Leu Ser
                485                 490                 495

Ala Pro Asn Leu Asn Ser Trp Lys Gln Asp Met Glu Arg Gly Asn Pro
                500                 505                 510

Glu Trp Ala Cys Ala Ser Gly Pro Met Ser Arg Ser Leu Arg Pro Gln
        515                 520                 525

Ser Arg Pro Gln Ile Ile Lys Glu Val Leu Ala Val Pro Asn Ser Ile
        530                 535                 540

Leu Glu Leu Pro Cys Pro His Leu Ser Ala Leu Ala Ser Tyr Tyr Trp
545                 550                 555                 560

Ser His Gly Pro Ala Ala Val Pro Glu Ala Ser Ser Thr Val Tyr Asn
                565                 570                 575

Gly Ser Leu Leu Leu Ile Val Gln Asp Gly Val Gly Gly Leu Tyr Gln
        580                 585                 590


                              38
```

```
Cys Trp Ala Thr Glu Asn Gly Phe Ser Tyr Pro Val Ile Ser Tyr Trp
        595                 600                 605

Val Asp Ser Gln Asp Gln Thr Leu Ala Leu Asp Pro Glu Leu Ala Gly
        610                 615                 620

Ile Pro Arg Glu His Val Lys Val Pro Leu Thr Arg Val Ser Gly Gly
625                 630                 635                 640

Ala Ala Leu Ala Ala Gln Gln Ser Tyr Trp Pro His Phe Val Thr Val
                645                 650                 655

Thr Val Leu Phe Ala Leu Val Leu Ser Gly Ala Leu Ile Ile Leu Val
                660                 665                 670

Ala Ser Pro Leu Arg Ala Leu Arg Ala Arg Gly Lys Val Gln Gly Cys
        675                 680                 685

Glu Thr Leu Arg Pro Gly Glu Lys Ala Pro Leu Ser Arg Glu Gln His
        690                 695                 700

Leu Gln Ser Pro Lys Glu Cys Arg Thr Ser Ala Ser Asp Val Asp Ala
705                 710                 715                 720

Asp Asn Asn Cys Leu Gly Thr Glu Val Ala
                725                 730


<210> 22
<211> 652
<212> PRT
<213> Homo sapiens

<400> 22
Gly Gly Gly Gly Gln Gly Pro Met Pro Arg Val Arg Tyr Tyr Ala Gly
  1                 5                 10                 15

Asp Glu Arg Arg Ala Leu Ser Phe Phe His Gln Lys Gly Leu Gln Asp
                20                 25                 30

Phe Asp Thr Leu Leu Leu Ser Gly Asp Gly Asn Thr Leu Tyr Val Gly
        35                 40                 45

Ala Arg Glu Ala Ile Leu Ala Leu Asp Ile Gln Asp Pro Gly Val Pro
        50                 55                 60

Arg Leu Lys Asn Met Ile Pro Trp Pro Ala Ser Asp Arg Lys Lys Ser
65                 70                 75                 80
```

39

Glu Cys Ala Phe Lys Lys Lys Ser Asn Glu Thr Gln Cys Phe Asn Phe
                85   90   95

Ile Arg Val Leu Val Ser Tyr Asn Val Thr His Leu Tyr Thr Cys Gly
            100   105   110

Thr Phe Ala Phe Ser Pro Ala Cys Thr Phe Ile Glu Leu Gln Asp Ser
            115   120   125

Tyr Leu Leu Pro Ile Ser Glu Asp Lys Val Met Glu Gly Lys Gly Gln
        130   135   140

Ser Pro Phe Asp Pro Ala His Lys His Thr Ala Val Leu Val Asp Gly
145   150   155   160

Met Leu Tyr Ser Gly Thr Met Asn Asn Phe Leu Gly Ser Glu Pro Ile
                165   170   175

Leu Met Arg Thr Leu Gly Ser Gln Pro Val Leu Lys Thr Asp Asn Phe
            180   185   190

Leu Arg Trp Leu His His Asp Ala Ser Phe Val Ala Ala Ile Pro Ser
            195   200   205

Thr Gln Val Val Tyr Phe Phe Phe Glu Glu Thr Ala Ser Glu Phe Asp
        210   215   220

Phe Phe Glu Arg Leu His Thr Ser Arg Val Ala Arg Val Cys Lys Asn
225   230   235   240

Asp Val Gly Gly Glu Lys Leu Leu Gln Lys Lys Trp Thr Thr Phe Leu
                245   250   255

Lys Ala Gln Leu Leu Cys Thr Gln Pro Gly Gln Leu Pro Phe Asn Val
            260   265   270

Ile Arg His Ala Val Leu Leu Pro Ala Asp Ser Pro Thr Ala Pro His
            275   280   285

Ile Tyr Ala Val Phe Thr Ser Gln Trp Gln Val Gly Gly Thr Arg Ser
        290   295   300

Ser Ala Val Cys Ala Phe Ser Leu Leu Asp Ile Glu Arg Val Phe Lys
305   310   315   320

Gly Lys Tyr Lys Glu Leu Asn Lys Glu Thr Ser Arg Trp Thr Thr Tyr
                325   330   335

40

```
Arg Gly Pro Glu Thr Asn Pro Arg Pro Gly Ser Cys Ser Val Gly Pro
          340               345               350

Ser Ser Asp Lys Ala Leu Thr Phe Met Lys Asp His Phe Leu Met Asp
          355               360               365

Glu Gln Val Val Gly Thr Pro Leu Leu Val Lys Ser Gly Val Glu Tyr
          370               375               380

Thr Arg Leu Ala Val Glu Thr Ala Gln Gly Leu Asp Gly His Ser His
385               390               395               400

Leu Val Met Tyr Leu Gly Thr Thr Thr Gly Ser Leu His Lys Ala Val
              405               410               415

Val Ser Gly Asp Ser Ser Ala His Leu Val Glu Glu Ile Gln Leu Phe
          420               425               430

Pro Asp Pro Glu Pro Val Arg Asn Leu Gln Leu Ala Pro Thr Gln Gly
          435               440               445

Ala Val Phe Val Gly Phe Ser Gly Gly Val Trp Arg Val Pro Arg Ala
          450               455               460

Asn Cys Ser Val Tyr Glu Ser Cys Val Asp Cys Val Leu Ala Arg Asp
465               470               475               480

Pro His Cys Ala Trp Asp Pro Glu Ser Arg Thr Cys Cys Leu Leu Ser
              485               490               495

Ala Pro Asn Leu Asn Ser Trp Lys Gln Asp Met Glu Arg Gly Asn Pro
          500               505               510

Glu Trp Ala Cys Ala Ser Gly Pro Met Ser Arg Ser Leu Arg Pro Gln
          515               520               525

Ser Arg Pro Gln Ile Ile Lys Glu Val Leu Ala Val Pro Asn Ser Ile
          530               535               540

Leu Glu Leu Pro Cys Pro His Leu Ser Ala Leu Ala Ser Tyr Tyr Trp
545               550               555               560

Ser His Gly Pro Ala Ala Val Pro Glu Ala Ser Ser Thr Val Tyr Asn
              565               570               575

Gly Ser Leu Leu Leu Ile Val Gln Asp Gly Val Gly Gly Leu Tyr Gln
          580               585               590
```

41

Cys Trp Ala Thr Glu Asn Gly Phe Ser Tyr Pro Val Ile Ser Tyr Trp
         595   600   605

Val Asp Ser Gln Asp Gln Thr Leu Ala Leu Asp Pro Glu Leu Ala Gly
         610   615   620

Ile Pro Arg Glu His Val Lys Val Pro Leu Thr Arg Val Ser Gly Gly
625   630   635   640

Ala Ala Leu Ala Ala Gln Gln Ser Tyr Trp Pro His
                 645   650

<210> 23
<211> 21
<212> PRT
<213> Homo sapiens

<400> 23
Phe Val Thr Val Thr Val Leu Phe Ala Leu Val Leu Ser Gly Ala Leu
    1   5   10   15

Ile Ile Leu Val Ala
             20

<210> 24
<211> 57
<212> PRT
<213> Homo sapiens

<400> 24
Ser Pro Leu Arg Ala Leu Arg Ala Arg Gly Lys Val Gln Gly Cys Glu
    1   5   10   15

Thr Leu Arg Pro Gly Glu Lys Ala Pro Leu Ser Arg Glu Gln His Leu
             20   25   30

Gln Ser Pro Lys Glu Cys Arg Thr Ser Ala Ser Asp Val Asp Ala Asp
         35   40   45

Asn Asn Cys Leu Gly Thr Glu Val Ala
         50   55

<210> 25
<211> 2964

<212> DNA
<213> Homo sapiens

<400> 25
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cgccctatta cactgaccca ggaggaccgg ggatgaaccc tgtcgggaat tccatggcaa 540
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43

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gctcgtttct cttttttgtt ctcttttgat aggatcctgt ttcctatgtg tgcaaaataa 2880
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<210> 26
<211> 516
<212> DNA
<213> Homo sapiens

<400> 26
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tcctacgagg actgctgtgg ctccaggtgc tgtgtgcggg ccctctccat acagaggctg 180
tggtacttct ggttccttct gatgatgggc gtgctttttct gctgcggagc cggcttcttc 240
atccggaggc gcatgtaccc cccgccgctg atcgaggagc cagccttcaa tgtgtcctac 300
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cctccgcccc cgtacgaaca ggtagtgaag gccaag                          516
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<210> 27
<211> 172
<212> PRT
<213> Homo sapiens

<400> 27
```
Met Arg Arg Gln Pro Ala Lys Val Ala Ala Leu Leu Leu Gly Leu Leu
1               5                   10                  15


Leu Glu Cys Thr Glu Ala Lys Lys His Cys Trp Tyr Phe Glu Gly Leu
            20                  25                  30


Tyr Pro Thr Tyr Tyr Ile Cys Arg Ser Tyr Glu Asp Cys Cys Gly Ser
        35                  40                  45


Arg Cys Cys Val Arg Ala Leu Ser Ile Gln Arg Leu Trp Tyr Phe Trp
    50                  55                  60


Phe Leu Leu Met Met Gly Val Leu Phe Cys Cys Gly Ala Gly Phe Phe
65                  70                  75                  80


Ile Arg Arg Arg Met Tyr Pro Pro Pro Leu Ile Glu Glu Pro Ala Phe
                85                  90                  95
```

44

Asn Val Ser Tyr Thr Arg Gln Pro Pro Asn Pro Gly Pro Gly Ala Gln
            100   105   110

Gln Pro Gly Pro Pro Tyr Tyr Thr Asp Pro Gly Gly Pro Gly Met Asn
            115   120   125

Pro Val Gly Asn Ser Met Ala Met Ala Phe Gln Val Pro Pro Asn Ser
            130   135   140

Pro Gln Gly Ser Val Ala Cys Pro Pro Pro Ala Tyr Cys Asn Thr
145   150   155   160

Pro Pro Pro Pro Tyr Glu Gln Val Val Lys Ala Lys
                    165   170

<210> 28
<211> 22
<212> PRT
<213> Homo sapiens

<400> 28
Met Arg Arg Gln Pro Ala Lys Val Ala Ala Leu Leu Leu Gly Leu Leu
  1   5   10   15

Leu Glu Cys Thr Glu Ala
                20

<210> 29
<211> 150
<212> PRT
<213> Homo sapiens

<400> 29
Lys Lys His Cys Trp Tyr Phe Glu Gly Leu Tyr Pro Thr Tyr Tyr Ile
  1   5   10   15

Cys Arg Ser Tyr Glu Asp Cys Cys Gly Ser Arg Cys Cys Val Arg Ala
            20   25   30

Leu Ser Ile Gln Arg Leu Trp Tyr Phe Trp Phe Leu Leu Met Met Gly
            35   40   45

Val Leu Phe Cys Cys Gly Ala Gly Phe Phe Ile Arg Arg Arg Met Tyr
            50   55   60

45

```
Pro Pro Pro Leu Ile Glu Glu Pro Ala Phe Asn Val Ser Tyr Thr Arg
65                  70                  75                  80


Gln Pro Pro Asn Pro Gly Pro Gly Ala Gln Gln Pro Gly Pro Pro Tyr
                85                  90                  95


Tyr Thr Asp Pro Gly Gly Pro Gly Met Asn Pro Val Gly Asn Ser Met
            100                 105                 110


Ala Met Ala Phe Gln Val Pro Pro Asn Ser Pro Gln Gly Ser Val Ala
        115                 120                 125


Cys Pro Pro Pro Pro Ala Tyr Cys Asn Thr Pro Pro Pro Pro Tyr Glu
    130                 135                 140


Gln Val Val Lys Ala Lys
145                 150
```

```
<210> 30
<211> 38
<212> PRT
<213> Homo sapiens

<400> 30
Lys Lys His Cys Trp Tyr Phe Glu Gly Leu Tyr Pro Thr Tyr Tyr Ile
  1               5                   10                  15


Cys Arg Ser Tyr Glu Asp Cys Cys Gly Ser Arg Cys Cys Val Arg Ala
            20                  25                  30


Leu Ser Ile Gln Arg Leu
          35
```

```
<210> 31
<211> 21
<212> PRT
<213> Homo sapiens

<400> 31
Trp Tyr Phe Trp Phe Leu Leu Met Met Gly Val Leu Phe Cys Cys Gly
  1               5                   10                  15


Ala Gly Phe Phe Ile
            20
```

<210> 32
<211> 91
<212> PRT
<213> Homo sapiens

<400> 32
Arg Arg Arg Met Tyr Pro Pro Pro Leu Ile Glu Glu Pro Ala Phe Asn
 1   5   10   15

Val Ser Tyr Thr Arg Gln Pro Pro Asn Pro Gly Pro Gly Ala Gln Gln
            20   25   30

Pro Gly Pro Pro Tyr Tyr Thr Asp Pro Gly Gly Pro Gly Met Asn Pro
        35   40   45

Val Gly Asn Ser Met Ala Met Ala Phe Gln Val Pro Pro Asn Ser Pro
    50   55   60

Gln Gly Ser Val Ala Cys Pro Pro Pro Ala Tyr Cys Asn Thr Pro
65   70   75   80

Pro Pro Pro Tyr Glu Gln Val Val Lys Ala Lys
                85   90

<210> 33
<211> 1980
<212> DNA
<213> Homo sapiens

<400> 33
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47

```
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aaagttttct ttcttaagcc ttcaggaacc cagaataagg cagactctgt taaagggata 1680
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tctagtggtt ttcccctacc tgcatattgg ttttcatgtt ttatattcac tgttactatc 1920
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<210> 34
<211> 1365
<212> DNA
<213> Homo sapiens

<400> 34
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gagtctccac tttttgttct gtataactcc tttgctgagc ccatggagaa acccatttta 420
aagaacttaa atgaaatgct ctgtcccatt attgcaagtg aagtcaaagc gctaaatgcc 480
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<210> 35
<211> 455
<212> PRT
<213> Homo sapiens

<400> 35

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Met Cys Thr Lys Thr Ile Pro Val Leu Trp Gly Cys Phe Leu Leu Trp
 1               5                  10                  15

Asn Leu Tyr Val Ser Ser Ser Gln Thr Ile Tyr Pro Gly Ile Lys Ala
            20                  25                  30

Arg Ile Thr Gln Arg Ala Leu Asp Tyr Gly Val Gln Ala Gly Met Lys
        35                  40                  45

Met Ile Glu Gln Met Leu Lys Glu Lys Lys Leu Pro Asp Leu Ser Gly
    50                  55                  60

Ser Glu Ser Leu Glu Phe Leu Lys Val Asp Tyr Val Asn Tyr Asn Phe
65                  70                  75                  80

Ser Asn Ile Lys Ile Ser Ala Phe Ser Phe Pro Asn Thr Ser Leu Ala
                85                  90                  95

Phe Val Pro Gly Val Gly Ile Lys Ala Leu Thr Asn His Gly Thr Ala
            100                 105                 110

Asn Ile Ser Thr Asp Trp Gly Phe Glu Ser Pro Leu Phe Val Leu Tyr
        115                 120                 125

Asn Ser Phe Ala Glu Pro Met Glu Lys Pro Ile Leu Lys Asn Leu Asn
    130                 135                 140

Glu Met Leu Cys Pro Ile Ile Ala Ser Glu Val Lys Ala Leu Asn Ala
145                 150                 155                 160

Asn Leu Ser Thr Leu Glu Val Leu Thr Lys Ile Asp Asn Tyr Thr Leu
                165                 170                 175

Leu Asp Tyr Ser Leu Ile Ser Ser Pro Glu Ile Thr Glu Asn Tyr Leu
            180                 185                 190

Asp Leu Asn Leu Lys Gly Val Phe Tyr Pro Leu Glu Asn Leu Thr Asp
        195                 200                 205

Pro Pro Phe Ser Pro Val Pro Phe Val Leu Pro Glu Arg Ser Asn Ser
    210                 215                 220
```

49

Met Leu Tyr Ile Gly Ile Ala Glu Tyr Phe Phe Lys Ser Ala Ser Phe
225   230   235   240

Ala His Phe Thr Ala Gly Val Phe Asn Leu Thr Leu Ser Thr Glu Glu
                245   250   255

Ile Ser Asn His Phe Val Gln Asn Ser Gln Gly Leu Gly Asn Val Leu
                260   265   270

Ser Arg Ile Ala Glu Ile Tyr Ile Leu Ser Gln Pro Phe Met Val Arg
                275   280   285

Ile Met Ala Thr Glu Pro Pro Ile Ile Asn Leu Gln Pro Gly Asn Phe
                290   295   300

Thr Leu Asp Ile Pro Ala Ser Ile Met Met Leu Thr Gln Pro Lys Asn
305   310   315   320

Ser Thr Val Glu Thr Ile Val Ser Met Asp Phe Val Ala Ser Thr Ser
                325   330   335

Val Gly Leu Val Ile Leu Gly Gln Arg Leu Val Cys Ser Leu Ser Leu
                340   345   350

Asn Arg Phe Arg Leu Ala Leu Pro Glu Ser Asn Arg Ser Asn Ile Glu
                355   360   365

Val Leu Arg Phe Glu Asn Ile Leu Ser Ser Ile Leu His Phe Gly Val
                370   375   380

Leu Pro Leu Ala Asn Ala Lys Leu Gln Gln Gly Phe Pro Leu Pro Asn
385   390   395   400

Pro His Lys Phe Leu Phe Val Asn Ser Asp Ile Glu Val Leu Glu Gly
                405   410   415

Phe Leu Leu Ile Ser Thr Asp Leu Lys Tyr Glu Thr Ser Ser Lys Gln
                420   425   430

Gln Pro Ser Phe His Val Trp Glu Gly Leu Asn Leu Ile Ser Arg Gln
                435   440   445

Trp Arg Gly Lys Ser Ala Pro
450   455

<210> 36

50

<211> 23
<212> PRT
<213> Homo sapiens

<400> 36
Met Cys Thr Lys Thr Ile Pro Val Leu Trp Gly Cys Phe Leu Leu Trp
 1   5   10   15

Asn Leu Tyr Val Ser Ser Ser
            20

<210> 37
<211> 432
<212> PRT
<213> Homo sapiens

<400> 37
Gln Thr Ile Tyr Pro Gly Ile Lys Ala Arg Ile Thr Gln Arg Ala Leu
 1   5   10   15

Asp Tyr Gly Val Gln Ala Gly Met Lys Met Ile Glu Gln Met Leu Lys
            20   25   30

Glu Lys Lys Leu Pro Asp Leu Ser Gly Ser Glu Ser Leu Glu Phe Leu
        35   40   45

Lys Val Asp Tyr Val Asn Tyr Asn Phe Ser Asn Ile Lys Ile Ser Ala
        50   55   60

Phe Ser Phe Pro Asn Thr Ser Leu Ala Phe Val Pro Gly Val Gly Ile
65   70   75   80

Lys Ala Leu Thr Asn His Gly Thr Ala Asn Ile Ser Thr Asp Trp Gly
                85   90   95

Phe Glu Ser Pro Leu Phe Val Leu Tyr Asn Ser Phe Ala Glu Pro Met
                100   105   110

Glu Lys Pro Ile Leu Lys Asn Leu Asn Glu Met Leu Cys Pro Ile Ile
        115   120   125

Ala Ser Glu Val Lys Ala Leu Asn Ala Asn Leu Ser Thr Leu Glu Val
        130   135   140

Leu Thr Lys Ile Asp Asn Tyr Thr Leu Leu Asp Tyr Ser Leu Ile Ser
145   150   155   160

51

Ser Pro Glu Ile Thr Glu Asn Tyr Leu Asp Leu Asn Leu Lys Gly Val
                165   170   175

Phe Tyr Pro Leu Glu Asn Leu Thr Asp Pro Pro Phe Ser Pro Val Pro
            180   185   190

Phe Val Leu Pro Glu Arg Ser Asn Ser Met Leu Tyr Ile Gly Ile Ala
        195   200   205

Glu Tyr Phe Phe Lys Ser Ala Ser Phe Ala His Phe Thr Ala Gly Val
    210   215   220

Phe Asn Leu Thr Leu Ser Thr Glu Glu Ile Ser Asn His Phe Val Gln
225   230   235   240

Asn Ser Gln Gly Leu Gly Asn Val Leu Ser Arg Ile Ala Glu Ile Tyr
            245   250   255

Ile Leu Ser Gln Pro Phe Met Val Arg Ile Met Ala Thr Glu Pro Pro
            260   265   270

Ile Ile Asn Leu Gln Pro Gly Asn Phe Thr Leu Asp Ile Pro Ala Ser
            275   280   285

Ile Met Met Leu Thr Gln Pro Lys Asn Ser Thr Val Glu Thr Ile Val
    290   295   300

Ser Met Asp Phe Val Ala Ser Thr Ser Val Gly Leu Val Ile Leu Gly
305   310   315   320

Gln Arg Leu Val Cys Ser Leu Ser Leu Asn Arg Phe Arg Leu Ala Leu
            325   330   335

Pro Glu Ser Asn Arg Ser Asn Ile Glu Val Leu Arg Phe Glu Asn Ile
            340   345   350

Leu Ser Ser Ile Leu His Phe Gly Val Leu Pro Leu Ala Asn Ala Lys
            355   360   365

Leu Gln Gln Gly Phe Pro Leu Pro Asn Pro His Lys Phe Leu Phe Val
    370   375   380

Asn Ser Asp Ile Glu Val Leu Glu Gly Phe Leu Leu Ile Ser Thr Asp
385   390   395   400

Leu Lys Tyr Glu Thr Ser Ser Lys Gln Gln Pro Ser Phe His Val Trp
            405   410   415

52

Glu Gly Leu Asn Leu Ile Ser Arg Gln Trp Arg Gly Lys Ser Ala Pro
        420   425   430

<210> 38
<211> 483
<212> PRT
<213> Homo sapiens

<400> 38
Met Ala Arg Gly Pro Cys Asn Ala Pro Arg Trp Val Ser Leu Met Val
 1   5   10   15

Leu Val Ala Ile Gly Thr Ala Val Thr Ala Ala Val Asn Pro Gly Val
            20   25   30

Val Val Arg Ile Ser Gln Lys Gly Leu Asp Tyr Ala Ser Gln Gln Gly
        35   40   45

Thr Ala Ala Leu Gln Lys Glu Leu Lys Arg Ile Lys Ile Pro Asp Tyr
    50   55   60

Ser Asp Ser Phe Lys Ile Lys His Leu Gly Lys Gly His Tyr Ser Phe
65   70   75   80

Tyr Ser Met Asp Ile Arg Glu Phe Gln Leu Pro Ser Ser Gln Ile Ser
                85   90   95

Met Val Pro Asn Val Gly Leu Lys Phe Ser Ile Ser Asn Ala Asn Ile
            100   105   110

Lys Ile Ser Gly Lys Trp Lys Ala Gln Lys Arg Phe Leu Lys Met Ser
        115   120   125

Gly Asn Phe Asp Leu Ser Ile Glu Gly Met Ser Ile Ser Ala Asp Leu
    130   135   140

Lys Leu Gly Ser Asn Pro Thr Ser Gly Lys Pro Thr Ile Thr Cys Ser
145   150   155   160

Ser Cys Ser Ser His Ile Asn Ser Val His Val His Ile Ser Lys Ser
                165   170   175

Lys Val Gly Trp Leu Ile Gln Leu Phe His Lys Lys Ile Glu Ser Ala
            180   185   190

53

```
Leu Arg Asn Lys Met Asn Ser Gln Val Cys Glu Lys Val Thr Asn Ser
        195                 200                 205

Val Ser Ser Lys Leu Gln Pro Tyr Phe Gln Thr Leu Pro Val Met Thr
        210                 215                 220

Lys Ile Asp Ser Val Ala Gly Ile Asn Tyr Gly Leu Val Ala Pro Pro
225                 230                 235                 240

Ala Thr Thr Ala Glu Thr Leu Asp Val Gln Met Lys Gly Glu Phe Tyr
                245                 250                 255

Ser Glu Asn His His Asn Pro Pro Pro Phe Ala Pro Pro Val Met Glu
        260                 265                 270

Phe Pro Ala Ala His Asp Arg Met Val Tyr Leu Gly Leu Ser Asp Tyr
        275                 280                 285

Phe Phe Asn Thr Ala Gly Leu Val Tyr Gln Glu Ala Gly Val Leu Lys
        290                 295                 300

Met Thr Leu Arg Asp Asp Met Ile Pro Lys Glu Ser Lys Phe Arg Leu
305                 310                 315                 320

Thr Thr Lys Phe Phe Gly Thr Phe Leu Pro Glu Val Ala Lys Lys Phe
                325                 330                 335

Pro Asn Met Lys Ile Gln Ile His Val Ser Ala Ser Thr Pro Pro His
                340                 345                 350

Leu Ser Val Gln Pro Thr Gly Leu Thr Phe Tyr Pro Ala Val Asp Val
        355                 360                 365

Gln Ala Phe Ala Val Leu Pro Asn Ser Ser Leu Ala Ser Leu Phe Leu
        370                 375                 380

Ile Gly Met His Thr Thr Gly Ser Met Glu Val Ser Ala Glu Ser Asn
385                 390                 395                 400

Arg Leu Val Gly Glu Leu Lys Leu Asp Arg Leu Leu Leu Glu Leu Lys
                405                 410                 415

His Ser Asn Ile Gly Pro Phe Pro Val Glu Leu Leu Gln Asp Ile Met
                420                 425                 430

Asn Tyr Ile Val Pro Ile Leu Val Leu Pro Arg Val Asn Glu Lys Leu
        435                 440                 445
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Gln Lys Gly Phe Pro Leu Pro Thr Pro Ala Arg Val Gln Leu Tyr Asn
    450   455   460

Val Val Leu Gln Pro His Gln Asn Phe Leu Leu Phe Gly Ala Asp Val
465   470   475   480

Val Tyr Lys

<210> 39
<211> 481
<212> PRT
<213> Homo sapiens

<400> 39
Met Gly Ala Leu Ala Arg Ala Leu Pro Ser Ile Leu Leu Ala Leu Leu
    1   5   10   15

Leu Thr Ser Thr Pro Glu Ala Leu Gly Ala Asn Pro Gly Leu Val Ala
              20   25   30

Arg Ile Thr Asp Lys Gly Leu Gln Tyr Ala Ala Gln Glu Gly Leu Leu
         35   40   45

Ala Leu Gln Ser Glu Leu Leu Arg Ile Thr Leu Pro Asp Phe Thr Gly
    50   55   60

Asp Leu Arg Ile Pro His Val Gly Arg Gly Arg Tyr Glu Phe His Ser
65   70   75   80

Leu Asn Ile His Glu Phe Gln Leu Pro Ser Ser Gln Ile Ser Met Val
              85   90   95

Pro Asn Val Gly Leu Lys Phe Ser Ile Ser Asn Ala Asn Ile Lys Ile
              100   105   110

Ser Gly Lys Trp Lys Ala Gln Lys Arg Phe Leu Lys Met Ser Gly Asn
         115   120   125

Phe Asp Leu Ser Ile Glu Gly Met Ser Ile Ser Ala Asp Leu Lys Leu
    130   135   140

Gly Ser Asn Pro Thr Ser Gly Lys Pro Thr Ile Thr Cys Ser Ser Cys
145   150   155   160

Ser Ser His Ile Asn Ser Val His Val His Ile Ser Lys Ser Lys Val

55

Gly Trp Leu Ile Gln Leu Phe His Lys Lys Ile Glu Ser Ala Leu Arg
    180   185   190

Asn Lys Met Asn Ser Gln Val Cys Glu Lys Val Thr Asn Ser Val Ser
    195   200   205

Ser Lys Leu Gln Pro Tyr Phe Gln Thr Leu Pro Val Met Thr Lys Ile
    210   215   220

Asp Ser Val Ala Gly Ile Asn Tyr Gly Leu Val Ala Pro Pro Ala Thr
225   230   235   240

Thr Ala Glu Thr Leu Asp Val Gln Met Lys Gly Glu Phe Tyr Ser Glu
    245   250   255

Asn His His Asn Pro Pro Pro Phe Ala Pro Pro Val Met Glu Phe Pro
    260   265   270

Ala Ala His Asp Arg Met Val Tyr Leu Gly Leu Ser Asp Tyr Phe Phe
    275   280   285

Asn Thr Ala Gly Leu Val Tyr Gln Glu Ala Gly Val Leu Lys Met Thr
    290   295   300

Leu Arg Asp Asp Met Ile Pro Lys Glu Ser Lys Phe Arg Leu Thr Thr
305   310   315   320

Lys Phe Phe Gly Thr Phe Leu Pro Glu Val Ala Lys Lys Phe Pro Asn
    325   330   335

Met Lys Ile Gln Ile His Val Ser Ala Ser Thr Pro Pro His Leu Ser
    340   345   350

Val Gln Pro Thr Gly Leu Thr Phe Tyr Pro Ala Val Asp Val Gln Ala
    355   360   365

Leu Ala Val Leu Pro Asn Ser Ser Leu Ala Ser Leu Phe Leu Ile Gly
    370   375   380

Met His Thr Thr Gly Ser Met Glu Val Ser Ala Glu Ser Asn Arg Leu
385   390   395   400

Val Gly Glu Leu Lys Leu Asp Arg Leu Leu Leu Glu Leu Lys His Ser
    405   410   415

Asn Ile Gly Pro Phe Pro Val Glu Leu Leu Gln Asp Ile Met Asn Tyr

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                420                    425                    430

Ile Val Pro Ile Leu Val Leu Pro Arg Val Asn Glu Lys Leu Gln Lys
        435                    440                    445

Gly Phe Pro Leu Pro Thr Pro Ala Arg Val Gln Leu Tyr Asn Val Val
        450                    455                    460

Leu Gln Pro His Gln Asn Phe Leu Leu Phe Gly Ala Asp Val Val Tyr
465                    470                    475                    480

Lys


<210> 40
<211> 383
<212> PRT
<213> Caenorhabditis elegans

<400> 40
Met Arg Ile Ala His Ala Ser Ser Arg Gly Asn Ile Ser Ile Phe Ser
  1               5                   10                  15

Val Phe Leu Ile Pro Leu Ile Ala Tyr Ile Leu Ile Leu Pro Gly Val
              20                  25                  30

Arg Arg Lys Arg Val Val Thr Thr Val Thr Tyr Val Leu Met Leu Ala
            35                  40                  45

Val Gly Gly Ala Leu Ile Ala Ser Leu Ile Tyr Pro Cys Trp Ala Ser
        50                  55                  60

Gly Ser Gln Met Ile Tyr Thr Gln Phe Arg Gly His Ser Asn Glu Arg
 65                  70                  75                  80

Ile Leu Ala Lys Ile Gly Val Glu Ile Gly Leu Gln Lys Val Asn Val
                85                  90                  95

Thr Leu Lys Phe Glu Arg Leu Leu Ser Ser Asn Asp Val Leu Pro Gly
            100                 105                 110

Ser Asp Met Thr Glu Leu Tyr Tyr Asn Glu Gly Phe Asp Ile Ser Gly
            115                 120                 125

Ile Ser Ser Met Ala Glu Ala Leu His His Gly Leu Glu Asn Gly Leu
            130                 135                 140


                              57
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Pro Tyr Pro Met Leu Ser Val Leu Glu Tyr Phe Ser Leu Asn Gln Asp
145             150             155             160

Ser Phe Asp Trp Gly Arg His Tyr Arg Val Ala Gly His Tyr Thr His
            165             170             175

Ala Ala Ile Trp Phe Ala Phe Ala Cys Trp Cys Leu Ser Val Val Leu
            180             185             190

Met Leu Phe Leu Pro His Asn Ala Tyr Lys Ser Ile Leu Ala Thr Gly
            195             200             205

Ile Ser Cys Leu Ile Ala Cys Leu Val Tyr Leu Leu Leu Ser Pro Cys
    210             215             220

Glu Leu Arg Ile Ala Phe Thr Gly Glu Asn Phe Glu Arg Val Asp Leu
225             230             235             240

Thr Ala Thr Phe Ser Phe Cys Phe Tyr Leu Ile Phe Ala Ile Gly Ile
            245             250             255

Leu Cys Val Leu Cys Gly Leu Gly Leu Gly Ile Cys Glu His Trp Arg
            260             265             270

Ile Tyr Thr Leu Ser Thr Phe Leu Asp Ala Ser Leu Asp Glu His Val
            275             280             285

Gly Pro Lys Trp Lys Lys Leu Pro Thr Gly Gly Pro Ala Leu Gln Gly
    290             295             300

Val Gln Ile Gly Ala Tyr Gly Thr Asn Thr Thr Asn Ser Ser Arg Asp
305             310             315             320

Lys Asn Asp Ile Ser Ser Asp Lys Thr Ala Gly Ser Ser Gly Phe Gln
            325             330             335

Ser Arg Thr Ser Thr Cys Gln Ser Ser Ala Ser Ser Ala Ser Leu Arg
            340             345             350

Ser Gln Ser Ser Ile Glu Thr Val His Asp Glu Ala Glu Leu Glu Arg
            355             360             365

Thr His Val His Phe Leu Gln Glu Pro Cys Ser Ser Ser Ser Thr
    370             375             380
```

<210> 41
<211> 399

58

<212> PRT
<213> Homo sapiens

<400> 41
Met Lys Met Arg Phe Leu Gly Leu Val Val Cys Leu Val Leu Trp Pro
1   5   10   15

Leu His Ser Glu Gly Ser Gly Gly Lys Leu Thr Ala Val Asp Pro Glu
                20   25   30

Thr Asn Met Asn Val Ser Glu Ile Ile Ser Tyr Trp Gly Phe Pro Ser
            35   40   45

Glu Glu Tyr Leu Val Glu Thr Glu Asp Gly Tyr Ile Leu Cys Leu Asn
        50   55   60

Arg Ile Pro His Gly Arg Lys Asn His Ser Asp Lys Gly Pro Lys Pro
65   70   75   80

Val Val Phe Leu Gln His Gly Leu Leu Ala Asp Ser Ser Asn Trp Val
                85   90   95

Thr Asn Leu Ala Asn Ser Ser Leu Gly Phe Ile Leu Ala Asp Ala Gly
            100   105   110

Phe Asp Val Trp Met Gly Asn Ser Arg Gly Asn Thr Trp Ser Arg Lys
            115   120   125

His Lys Thr Leu Ser Val Ser Gln Asp Glu Phe Trp Ala Phe Ser Tyr
        130   135   140

Asp Glu Met Ala Lys Tyr Asp Leu Pro Ala Ser Ile Asn Phe Ile Leu
145   150   155   160

Asn Lys Thr Gly Gln Glu Gln Val Tyr Tyr Val Gly His Ser Gln Gly
                165   170   175

Thr Thr Ile Gly Phe Ile Ala Phe Ser Gln Ile Pro Glu Leu Ala Lys
            180   185   190

Arg Ile Lys Met Phe Phe Ala Leu Gly Pro Val Ala Ser Val Ala Phe
        195   200   205

Cys Thr Ser Pro Met Ala Lys Leu Gly Arg Leu Pro Asp His Leu Ile
        210   215   220

Lys Asp Leu Phe Gly Asp Lys Glu Phe Leu Pro Gln Ser Ala Phe Leu
225   230   235   240

59

Lys Trp Leu Gly Thr His Val Cys Thr His Val Ile Leu Lys Glu Leu
                245   250   255

Cys Gly Asn Leu Cys Phe Leu Leu Cys Gly Phe Asn Glu Arg Asn Leu
                260   265   270

Asn Met Ser Arg Val Asp Val Tyr Thr Thr His Ser Pro Ala Gly Thr
                275   280   285

Ser Val Gln Asn Met Leu His Trp Ser Gln Ala Val Lys Phe Gln Lys
                290   295   300

Phe Gln Ala Phe Asp Trp Gly Ser Ser Ala Lys Asn Tyr Phe His Tyr
305   310   315   320

Asn Gln Ser Tyr Pro Pro Thr Tyr Asn Val Lys Asp Met Leu Val Pro
                325   330   335

Thr Ala Val Trp Ser Gly Gly His Asp Trp Leu Ala Asp Val Tyr Asp
                340   345   350

Val Asn Ile Leu Leu Thr Gln Ile Thr Asn Leu Val Phe His Glu Ser
                355   360   365

Ile Pro Glu Trp Glu His Leu Asp Phe Ile Trp Gly Leu Asp Ala Pro
                370   375   380

Trp Arg Leu Tyr Asn Lys Ile Ile Asn Leu Met Arg Lys Tyr Gln
385   390   395

<210> 42
<211> 19
<212> PRT
<213> Mus sp.

<400> 42
Met Ala Pro Pro Ala Ala Arg Leu Ala Leu Leu Ser Ala Ala Ala Leu
  1   5   10   15

Thr Leu Ala

<210> 43
<211> 451
<212> PRT

60

<213> Mus sp.

<400> 43
Ala Arg Pro Ala Pro Gly Pro Arg Ser Gly Pro Glu Cys Phe Thr Ala
 1   5   10   15

Asn Gly Ala Asp Tyr Arg Gly Thr Gln Ser Trp Thr Ala Leu Gln Gly
             20   25   30

Gly Lys Pro Cys Leu Phe Trp Asn Glu Thr Phe Gln His Pro Tyr Asn
         35   40   45

Thr Leu Lys Tyr Pro Asn Gly Glu Gly Gly Leu Gly Glu His Asn Tyr
     50   55   60

Cys Arg Asn Pro Asp Gly Asp Val Ser Pro Trp Cys Tyr Val Ala Glu
 65   70   75   80

His Glu Asp Gly Val Tyr Trp Lys Tyr Cys Glu Ile Pro Ala Cys Gln
                 85   90   95

Met Pro Gly Asn Leu Gly Cys Tyr Lys Asp His Gly Asn Pro Pro Pro
             100   105   110

Leu Thr Gly Thr Ser Lys Thr Ser Asn Lys Leu Thr Ile Gln Thr Cys
         115   120   125

Ile Ser Phe Cys Arg Ser Gln Arg Phe Lys Phe Ala Gly Met Glu Ser
     130   135   140

Gly Tyr Ala Cys Phe Cys Gly Asn Asn Pro Asp Tyr Trp Lys His Gly
145   150   155   160

Glu Ala Ala Ser Thr Glu Cys Asn Ser Val Cys Phe Gly Asp His Thr
             165   170   175

Gln Pro Cys Gly Gly Asp Gly Arg Ile Ile Leu Phe Asp Thr Leu Val
             180   185   190

Gly Ala Cys Gly Gly Asn Tyr Ser Ala Met Ala Ala Val Val Tyr Ser
         195   200   205

Pro Asp Phe Pro Asp Thr Tyr Ala Thr Gly Arg Val Cys Tyr Trp Thr
     210   215   220

Ile Arg Val Pro Gly Ala Ser Arg Ile His Phe Asn Phe Thr Leu Phe
225   230   235   240

61

```
Asp Ile Arg Asp Ser Ala Asp Met Val Glu Leu Leu Asp Gly Tyr Thr
                245                 250                 255

His Arg Val Leu Val Arg Leu Ser Gly Arg Ser Arg Pro Pro Leu Ser
                260                 265                 270

Phe Asn Val Ser Leu Asp Phe Val Ile Leu Tyr Phe Phe Ser Asp Arg
                275                 280                 285

Ile Asn Gln Ala Gln Gly Phe Ala Val Leu Tyr Gln Ala Thr Lys Glu
    290                 295                 300

Glu Pro Pro Gln Glu Arg Pro Ala Val Asn Gln Thr Leu Ala Glu Val
305                 310                 315                 320

Ile Thr Glu Gln Ala Asn Leu Ser Val Ser Ala Ala His Ser Ser Lys
                325                 330                 335

Val Leu Tyr Val Ile Thr Pro Ser Pro Ser His Pro Pro Gln Thr Ala
                340                 345                 350

Gln Val Ala Ile Pro Gly His Arg Gln Leu Gly Pro Thr Ala Thr Glu
    355                 360                 365

Trp Lys Asp Gly Leu Cys Thr Ala Trp Arg Pro Ser Ser Ser Ser Gln
    370                 375                 380

Ser Gln Gln Leu Ser Gln Arg Phe Phe Cys Met Ser His Leu Asn Leu
385                 390                 395                 400

Ile Glu Ser Leu His Gln Glu Thr Leu Gly Thr Val Val Ser Leu Gly
                405                 410                 415

Leu Leu Glu Ile Ser Gly Pro Phe Ser Met Asn Leu Pro Leu Gln Ser
                420                 425                 430

Pro Ser Leu Arg Arg Ser Ser Arg Val Arg Val Asn Lys Met Thr Ala
                435                 440                 445

Ile Pro Ser
    450


<210> 44
<211> 150
<212> PRT
<213> Mus sp.
```

<400> 44

Lys Lys His Cys Trp Tyr Phe Glu Gly Leu Tyr Pro Thr Tyr Tyr Ile
 1   5   10   15

Cys Arg Ser Tyr Glu Asp Cys Cys Gly Ser Arg Cys Cys Val Arg Ala
            20   25   30

Leu Ser Ile Gln Arg Leu Trp Tyr Phe Trp Phe Leu Leu Met Met Gly
            35   40   45

Val Leu Phe Cys Cys Gly Ala Gly Phe Phe Ile Arg Arg Arg Met Tyr
    50   55   60

Pro Pro Pro Leu Ile Glu Glu Pro Thr Phe Asn Val Ser Tyr Thr Arg
65   70   75   80

Gln Pro Pro Asn Pro Ala Pro Gly Ala Gln Gln Met Gly Pro Pro Tyr
                85   90   95

Tyr Thr Asp Pro Gly Gly Pro Gly Met Asn Pro Val Gly Asn Thr Met
            100   105   110

Ala Met Ala Phe Gln Val Gln Pro Asn Ser Pro His Gly Gly Thr Thr
            115   120   125

Tyr Pro Pro Pro Pro Ser Tyr Cys Asn Thr Pro Pro Pro Pro Tyr Glu
            130   135   140

Gln Val Val Lys Asp Lys
145   150

<210> 45
<211> 2044
<212> DNA
<213> Homo sapiens

<400> 45
gtcgacccac gcgtccgggg aattgcagca ggaaaatatg tgaagagttt ttaaacccac 60
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ggaccatgtt ggaaaccttg tcaagacagt ggattgtctc acacagaatg gaaatgtggc 180
ttctgattct ggtggcgtat atgttccaga gaaatgtgaa ttcagtacat atgccaacta 240
aagctgtgga cccagaagca ttcatgaata ttagtgaaat catccaacat caaggctatc 300
cctgtgagga atatgaagtc gcaactgaag atgggtatat cctttctgtt aacaggattc 360
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gcctagttgg aggtgctagc aactggattt ccaacctgcc caacaatagc ctgggcttca 480
ttctggcaga tgctggtttt gacgtgtgga tggggaacag caggggaaac gcctggtctc 540
gaaaacacaa gacactctcc atagaccaag atgagttctg ggctttcagt tatgatgaga 600

63

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gctagacatt ttcaccttgt tgccacagag acataacact acctcaggaa gctgagctgc 1860
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ctcagaataa ggccaagttt tatagttgca tctcagggaa gaaaatttta taggatgttt 1980
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ccgc                                                                 2044


<210> 46
<211> 1269
<212> DNA
<213> Homo sapiens

<400> 46
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64

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<210> 47
<211> 423
<212> PRT
<213> Homo sapiens

<400> 47

Met	Leu	Glu	Thr	Leu	Ser	Arg	Gln	Trp	Ile	Val	Ser	His	Arg	Met	Glu
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Met Trp Leu Leu Ile Leu Val Ala Tyr Met Phe Gln Arg Asn Val Asn
             20   25   30

Ser Val His Met Pro Thr Lys Ala Val Asp Pro Glu Ala Phe Met Asn
         35   40   45

Ile Ser Glu Ile Ile Gln His Gln Gly Tyr Pro Cys Glu Glu Tyr Glu
     50   55   60

Val Ala Thr Glu Asp Gly Tyr Ile Leu Ser Val Asn Arg Ile Pro Arg
 65   70   75   80

Gly Leu Val Gln Pro Lys Lys Thr Gly Ser Arg Pro Val Val Leu Leu
                 85   90   95

Gln His Gly Leu Val Gly Gly Ala Ser Asn Trp Ile Ser Asn Leu Pro
             100   105   110

Asn Asn Ser Leu Gly Phe Ile Leu Ala Asp Ala Gly Phe Asp Val Trp
             115   120   125

Met Gly Asn Ser Arg Gly Asn Ala Trp Ser Arg Lys His Lys Thr Leu
         130   135   140

Ser Ile Asp Gln Asp Glu Phe Trp Ala Phe Ser Tyr Asp Glu Met Ala
145   150   155   160

Arg Phe Asp Leu Pro Ala Val Ile Asn Phe Ile Leu Gln Lys Thr Gly
                 165   170   175

65

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Gln Glu Lys Ile Tyr Tyr Val Gly Tyr Ser Gln Gly Thr Thr Met Gly
            180                 185                 190

Phe Ile Ala Phe Ser Thr Met Pro Glu Leu Ala Gln Lys Ile Lys Met
            195                 200                 205

Tyr Phe Ala Leu Ala Pro Ile Ala Thr Val Lys His Ala Lys Ser Pro
            210                 215                 220

Gly Thr Lys Phe Leu Leu Leu Pro Asp Met Met Ile Lys Gly Leu Phe
225                 230                 235                 240

Gly Lys Lys Glu Phe Leu Tyr Gln Thr Arg Phe Leu Arg Gln Leu Val
                245                 250                 255

Ile Tyr Leu Cys Gly Gln Val Ile Leu Asp Gln Ile Cys Ser Asn Ile
            260                 265                 270

Met Leu Leu Leu Gly Gly Phe Asn Thr Asn Asn Met Asn Met Ser Arg
            275                 280                 285

Ala Ser Val Tyr Ala Ala His Thr Leu Ala Gly Thr Ser Val Gln Asn
            290                 295                 300

Ile Leu His Trp Ser Gln Ala Val Asn Ser Gly Glu Leu Arg Ala Phe
305                 310                 315                 320

Asp Trp Gly Ser Glu Thr Lys Asn Leu Glu Lys Cys Asn Gln Pro Thr
                325                 330                 335

Pro Val Arg Tyr Arg Val Arg Asp Met Thr Val Pro Thr Ala Met Trp
                340                 345                 350

Thr Gly Gly Gln Asp Trp Leu Ser Asn Pro Glu Asp Val Lys Met Leu
                355                 360                 365

Leu Ser Glu Val Thr Asn Leu Ile Tyr His Lys Asn Ile Pro Glu Trp
            370                 375                 380

Ala His Val Asp Phe Ile Trp Gly Leu Asp Ala Pro His Arg Met Tyr
385                 390                 395                 400

Asn Glu Ile Ile His Leu Met Gln Gln Glu Glu Thr Asn Leu Ser Gln
                405                 410                 415

Gly Arg Cys Glu Ala Val Leu
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<210> 48
<211> 33
<212> PRT
<213> Homo sapiens

<400> 48
Met Leu Glu Thr Leu Ser Arg Gln Trp Ile Val Ser His Arg Met Glu
1   5   10   15

Met Trp Leu Leu Ile Leu Val Ala Tyr Met Phe Gln Arg Asn Val Asn
            20   25   30

Ser

<210> 49
<211> 390
<212> PRT
<213> Homo sapiens

<400> 49
Val His Met Pro Thr Lys Ala Val Asp Pro Glu Ala Phe Met Asn Ile
1   5   10   15

Ser Glu Ile Ile Gln His Gln Gly Tyr Pro Cys Glu Glu Tyr Glu Val
            20   25   30

Ala Thr Glu Asp Gly Tyr Ile Leu Ser Val Asn Arg Ile Pro Arg Gly
            35   40   45

Leu Val Gln Pro Lys Lys Thr Gly Ser Arg Pro Val Val Leu Leu Gln
        50   55   60

His Gly Leu Val Gly Gly Ala Ser Asn Trp Ile Ser Asn Leu Pro Asn
65   70   75   80

Asn Ser Leu Gly Phe Ile Leu Ala Asp Ala Gly Phe Asp Val Trp Met
                85   90   95

Gly Asn Ser Arg Gly Asn Ala Trp Ser Arg Lys His Lys Thr Leu Ser
                100   105   110

Ile Asp Gln Asp Glu Phe Trp Ala Phe Ser Tyr Asp Glu Met Ala Arg
            115   120   125

Phe Asp Leu Pro Ala Val Ile Asn Phe Ile Leu Gln Lys Thr Gly Gln

67

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              130                    135                    140

Glu Lys Ile Tyr Tyr Val Gly Tyr Ser Gln Gly Thr Thr Met Gly Phe
145                  150                  155                  160

Ile Ala Phe Ser Thr Met Pro Glu Leu Ala Gln Lys Ile Lys Met Tyr
                 165                  170                  175

Phe Ala Leu Ala Pro Ile Ala Thr Val Lys His Ala Lys Ser Pro Gly
             180                  185                  190

Thr Lys Phe Leu Leu Leu Pro Asp Met Met Ile Lys Gly Leu Phe Gly
             195                  200                  205

Lys Lys Glu Phe Leu Tyr Gln Thr Arg Phe Leu Arg Gln Leu Val Ile
    210                  215                  220

Tyr Leu Cys Gly Gln Val Ile Leu Asp Gln Ile Cys Ser Asn Ile Met
225                  230                  235                  240

Leu Leu Leu Gly Gly Phe Asn Thr Asn Asn Met Asn Met Ser Arg Ala
                 245                  250                  255

Ser Val Tyr Ala Ala His Thr Leu Ala Gly Thr Ser Val Gln Asn Ile
             260                  265                  270

Leu His Trp Ser Gln Ala Val Asn Ser Gly Glu Leu Arg Ala Phe Asp
         275                  280                  285

Trp Gly Ser Glu Thr Lys Asn Leu Glu Lys Cys Asn Gln Pro Thr Pro
    290                  295                  300

Val Arg Tyr Arg Val Arg Asp Met Thr Val Pro Thr Ala Met Trp Thr
305                  310                  315                  320

Gly Gly Gln Asp Trp Leu Ser Asn Pro Glu Asp Val Lys Met Leu Leu
             325                  330                  335

Ser Glu Val Thr Asn Leu Ile Tyr His Lys Asn Ile Pro Glu Trp Ala
             340                  345                  350

His Val Asp Phe Ile Trp Gly Leu Asp Ala Pro His Arg Met Tyr Asn
         355                  360                  365

Glu Ile Ile His Leu Met Gln Gln Glu Glu Thr Asn Leu Ser Gln Gly
    370                  375                  380

Arg Cys Glu Ala Val Leu
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68

385   390

<210> 50
<211> 221
<212> PRT
<213> Homo sapiens

<400> 50
Val His Met Pro Thr Lys Ala Val Asp Pro Glu Ala Phe Met Asn Ile
  1   5   10   15

Ser Glu Ile Ile Gln His Gln Gly Tyr Pro Cys Glu Glu Tyr Glu Val
              20   25   30

Ala Thr Glu Asp Gly Tyr Ile Leu Ser Val Asn Arg Ile Pro Arg Gly
          35   40   45

Leu Val Gln Pro Lys Lys Thr Gly Ser Arg Pro Val Val Leu Leu Gln
      50   55   60

His Gly Leu Val Gly Gly Ala Ser Asn Trp Ile Ser Asn Leu Pro Asn
65   70   75   80

Asn Ser Leu Gly Phe Ile Leu Ala Asp Ala Gly Phe Asp Val Trp Met
                  85   90   95

Gly Asn Ser Arg Gly Asn Ala Trp Ser Arg Lys His Lys Thr Leu Ser
              100   105   110

Ile Asp Gln Asp Glu Phe Trp Ala Phe Ser Tyr Asp Glu Met Ala Arg
              115   120   125

Phe Asp Leu Pro Ala Val Ile Asn Phe Ile Leu Gln Lys Thr Gly Gln
      130   135   140

Glu Lys Ile Tyr Tyr Val Gly Tyr Ser Gln Gly Thr Thr Met Gly Phe
145   150   155   160

Ile Ala Phe Ser Thr Met Pro Glu Leu Ala Gln Lys Ile Lys Met Tyr
                  165   170   175

Phe Ala Leu Ala Pro Ile Ala Thr Val Lys His Ala Lys Ser Pro Gly
                  180   185   190

Thr Lys Phe Leu Leu Leu Pro Asp Met Met Ile Lys Gly Leu Phe Gly
          195   200   205

69

Lys Lys Glu Phe Leu Tyr Gln Thr Arg Phe Leu Arg Gln
    210   215   220

<210> 51
<211> 25
<212> PRT
<213> Homo sapiens

<400> 51
Leu Val Ile Tyr Leu Cys Gly Gln Val Ile Leu Asp Gln Ile Cys Ser
 1   5   10   15

Asn Ile Met Leu Leu Leu Gly Gly Phe
                20   25

<210> 52
<211> 144
<212> PRT
<213> Homo sapiens

<400> 52
Asn Thr Asn Asn Met Asn Met Ser Arg Ala Ser Val Tyr Ala Ala His
 1   5   10   15

Thr Leu Ala Gly Thr Ser Val Gln Asn Ile Leu His Trp Ser Gln Ala
                20   25   30

Val Asn Ser Gly Glu Leu Arg Ala Phe Asp Trp Gly Ser Glu Thr Lys
            35   40   45

Asn Leu Glu Lys Cys Asn Gln Pro Thr Pro Val Arg Tyr Arg Val Arg
        50   55   60

Asp Met Thr Val Pro Thr Ala Met Trp Thr Gly Gly Gln Asp Trp Leu
 65   70   75   80

Ser Asn Pro Glu Asp Val Lys Met Leu Leu Ser Glu Val Thr Asn Leu
                85   90   95

Ile Tyr His Lys Asn Ile Pro Glu Trp Ala His Val Asp Phe Ile Trp
                100   105   110

Gly Leu Asp Ala Pro His Arg Met Tyr Asn Glu Ile Ile His Leu Met
            115   120   125

Gln Gln Glu Glu Thr Asn Leu Ser Gln Gly Arg Cys Glu Ala Val Leu

<210> 53
<211> 2133
<212> DNA
<213> Homo sapiens

<400> 53

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<210> 54
<211> 1029
<212> DNA
<213> Homo sapiens

<400> 54
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<210> 55
<211> 343
<212> PRT
<213> Homo sapiens

<400> 55
Met Ala Thr Leu Gly His Thr Phe Pro Phe Tyr Ala Gly Pro Lys Pro
1   5   10   15

Thr Phe Pro Met Asp Thr Thr Leu Ala Ser Ile Ile Met Ile Phe Leu
                20   25   30

Thr Ala Leu Ala Thr Phe Ile Val Ile Leu Pro Gly Ile Arg Gly Lys
            35   40   45

Thr Arg Leu Phe Trp Leu Leu Arg Val Val Thr Ser Leu Phe Ile Gly
        50   55   60

Ala Ala Ile Leu Ala Val Asn Phe Ser Ser Glu Trp Ser Val Gly Gln
65   70   75   80

72

Val Ser Thr Asn Thr Ser Tyr Lys Ala Phe Ser Ser Glu Trp Ile Ser
                85   90   95

Ala Asp Ile Gly Leu Gln Val Gly Leu Gly Gly Val Asn Ile Thr Leu
            100   105   110

Thr Gly Thr Pro Val Gln Gln Leu Asn Glu Thr Ile Asn Tyr Asn Glu
            115   120   125

Glu Phe Thr Trp Arg Leu Gly Glu Asn Tyr Ala Glu Glu Cys Ala Lys
        130   135   140

Ala Leu Glu Lys Gly Leu Pro Asp Pro Val Leu Tyr Leu Ala Glu Lys
145   150   155   160

Phe Thr Pro Arg Ser Pro Cys Gly Leu Tyr Arg Gln Tyr Arg Leu Ala
            165   170   175

Gly His Tyr Thr Ser Ala Met Leu Trp Val Ala Phe Leu Cys Trp Leu
            180   185   190

Leu Ala Asn Val Met Leu Ser Met Pro Val Leu Val Tyr Gly Gly Tyr
            195   200   205

Met Leu Leu Ala Thr Gly Ile Phe Gln Leu Leu Ala Leu Leu Phe Phe
    210   215   220

Ser Met Ala Thr Ser Leu Thr Ser Pro Cys Pro Leu His Leu Gly Ala
225   230   235   240

Ser Val Leu His Thr His His Gly Pro Ala Phe Trp Ile Thr Leu Thr
            245   250   255

Thr Gly Leu Leu Cys Val Leu Leu Gly Leu Ala Met Ala Val Ala His
            260   265   270

Arg Met Gln Pro His Arg Leu Lys Ala Phe Phe Asn Gln Ser Val Asp
        275   280   285

Glu Asp Pro Met Leu Glu Trp Ser Pro Glu Glu Gly Gly Leu Leu Ser
    290   295   300

Pro Arg Tyr Arg Ser Met Ala Asp Ser Pro Lys Ser Gln Asp Ile Pro
305   310   315   320

Leu Ser Glu Ala Ser Ser Thr Lys Ala Tyr Cys Lys Glu Ala His Pro
            325   330   335

73

Lys Asp Pro Asp Cys Ala Leu
            340

<210> 56
<211> 23
<212> PRT
<213> Homo sapiens

<400> 56
Met Ala Thr Leu Gly His Thr Phe Pro Phe Tyr Ala Gly Pro Lys Pro
 1   5   10   15

Thr Phe Pro Met Asp Thr Thr
            20

<210> 57
<211> 112
<212> PRT
<213> Homo sapiens

<400> 57
Asn Phe Ser Ser Glu Trp Ser Val Gly Gln Val Ser Thr Asn Thr Ser
 1   5   10   15

Tyr Lys Ala Phe Ser Ser Glu Trp Ile Ser Ala Asp Ile Gly Leu Gln
            20   25   30

Val Gly Leu Gly Gly Val Asn Ile Thr Leu Thr Gly Thr Pro Val Gln
            35   40   45

Gln Leu Asn Glu Thr Ile Asn Tyr Asn Glu Glu Phe Thr Trp Arg Leu
         50   55   60

Gly Glu Asn Tyr Ala Glu Glu Cys Ala Lys Ala Leu Glu Lys Gly Leu
 65   70   75   80

Pro Asp Pro Val Leu Tyr Leu Ala Glu Lys Phe Thr Pro Arg Ser Pro
                85   90   95

Cys Gly Leu Tyr Arg Gln Tyr Arg Leu Ala Gly His Tyr Thr Ser Ala
                100   105   110

74

<210> 58
<211> 22
<212> PRT
<213> Homo sapiens

<400> 58
Thr Ser Leu Thr Ser Pro Cys Pro Leu His Leu Gly Ala Ser Val Leu
1   5   10   15

His Thr His His Gly Pro
            20

<210> 59
<211> 19
<212> PRT
<213> Homo sapiens

<400> 59
Leu Ala Ser Ile Ile Met Ile Phe Leu Thr Ala Leu Ala Thr Phe Ile
1   5   10   15

Val Ile Leu

<210> 60
<211> 20
<212> PRT
<213> Homo sapiens

<400> 60
Leu Phe Trp Leu Leu Arg Val Val Thr Ser Leu Phe Ile Gly Ala Ala
1   5   10   15

Ile Leu Ala Val
            20

<210> 61
<211> 22
<212> PRT
<213> Homo sapiens

<400> 61
Met Leu Trp Val Ala Phe Leu Cys Trp Leu Leu Ala Asn Val Met Leu
1   5   10   15

Ser Met Pro Val Leu Val
            20

<210> 62
<211> 17
<212> PRT
<213> Homo sapiens

<400> 62
Leu Ala Thr Gly Ile Phe Gln Leu Leu Ala Leu Leu Phe Phe Ser Met
 1   5   10   15

Ala

<210> 63
<211> 22
<212> PRT
<213> Homo sapiens

<400> 63
Ala Phe Trp Ile Thr Leu Thr Thr Gly Leu Leu Cys Val Leu Leu Gly
 1   5   10   15

Leu Ala Met Ala Val Ala
            20

<210> 64
<211> 8
<212> PRT
<213> Homo sapiens

<400> 64
Pro Gly Ile Arg Gly Lys Thr Arg
 1   5

<210> 65
<211> 6
<212> PRT
<213> Homo sapiens

<400> 65
Tyr Gly Gly Tyr Met Leu

<210> 66
<211> 72
<212> PRT
<213> Homo sapiens

<400> 66
His Arg Met Gln Pro His Arg Leu Lys Ala Phe Phe Asn Gln Ser Val
1   5   10   15

Asp Glu Asp Pro Met Leu Glu Trp Ser Pro Glu Glu Gly Gly Leu Leu
                20   25   30

Ser Pro Arg Tyr Arg Ser Met Ala Asp Ser Pro Lys Ser Gln Asp Ile
                35   40   45

Pro Leu Ser Glu Ala Ser Ser Thr Lys Ala Tyr Cys Lys Glu Ala His
         50   55   60

Pro Lys Asp Pro Asp Cys Ala Leu
65   70

<210> 67
<211> 4928
<212> DNA
<213> Mus sp.

<400> 67
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Phe Thr Ala Asn Gly Ala Asp Tyr Arg Gly Thr Gln Ser Trp Thr Ala
            35   40   45

Leu Gln Gly Gly Lys Pro Cys Leu Phe Trp Asn Glu Thr Phe Gln His
        50   55   60

Pro Tyr Asn Thr Leu Lys Tyr Pro Asn Gly Glu Gly Gly Leu Gly Glu
65   70   75   80

His Asn Tyr Cys Arg Asn Pro Asp Gly Asp Val Ser Pro Trp Cys Tyr
                85   90   95

Val Ala Glu His Glu Asp Gly Val Tyr Trp Lys Tyr Cys Glu Ile Pro
            100   105   110

Ala Cys Gln Met Pro Gly Asn Leu Gly Cys Tyr Lys Asp His Gly Asn
            115   120   125

Pro Pro Pro Leu Thr Gly Thr Ser Lys Thr Ser Asn Lys Leu Thr Ile
        130   135   140

Gln Thr Cys Ile Ser Phe Cys Arg Ser Gln Arg Phe Lys Phe Ala Gly
145   150   155   160

Met Glu Ser Gly Tyr Ala Cys Phe Cys Gly Asn Asn Pro Asp Tyr Trp
                165   170   175

Lys His Gly Glu Ala Ala Ser Thr Glu Cys Asn Ser Val Cys Phe Gly
            180   185   190

Asp His Thr Gln Pro Cys Gly Gly Asp Gly Arg Ile Ile Leu Phe Asp
        195   200   205

80

Thr Leu Val Gly Ala Cys Gly Gly Asn Tyr Ser Ala Met Ala Ala Val
    210   215   220

Val Tyr Ser Pro Asp Phe Pro Asp Thr Tyr Ala Thr Gly Arg Val Cys
225   230   235   240

Tyr Trp Thr Ile Arg Val Pro Gly Ala Ser Arg Ile His Phe Asn Phe
            245   250   255

Thr Leu Phe Asp Ile Arg Asp Ser Ala Asp Met Val Glu Leu Leu Asp
        260   265   270

Gly Tyr Thr His Arg Val Leu Val Arg Leu Ser Gly Arg Ser Arg Pro
    275   280   285

Pro Leu Ser Phe Asn Val Ser Leu Asp Phe Val Ile Leu Tyr Phe Phe
    290   295   300

Ser Asp Arg Ile Asn Gln Ala Gln Gly Phe Ala Val Leu Tyr Gln Ala
305   310   315   320

Thr Lys Glu Glu Pro Pro Gln Glu Arg Pro Ala Val Asn Gln Thr Leu
            325   330   335

Ala Glu Val Ile Thr Glu Gln Ala Asn Leu Ser Val Ser Ala Ala His
            340   345   350

Ser Ser Lys Val Leu Tyr Val Ile Thr Pro Ser Pro Ser His Pro Pro
    355   360   365

Gln Thr Ala Gln Val Ala Ile Pro Gly His Arg Gln Leu Gly Pro Thr
    370   375   380

Ala Thr Glu Trp Lys Asp Gly Leu Cys Thr Ala Trp Arg Pro Ser Ser
385   390   395   400

Ser Ser Gln Ser Gln Gln Leu Ser Gln Arg Phe Phe Cys Met Ser His
            405   410   415

Leu Asn Leu Ile Glu Ser Leu His Gln Glu Thr Leu Gly Thr Val Val
            420   425   430

Ser Leu Gly Leu Leu Glu Ile Ser Gly Pro Phe Ser Met Asn Leu Pro
    435   440   445

Leu Gln Ser Pro Ser Leu Arg Arg Ser Ser Arg Val Arg Val Asn Lys
    450   455   460

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Met Thr Ala Ile Pro Ser
465   470

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<211> 760
<212> PRT
<213> Mus sp.

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 1   5   10   15

Phe Phe Phe Gln Leu Phe Leu Leu Pro Ser Leu Pro Pro Ala Ser Gly
            20   25   30

Thr Gly Gly Gln Gly Pro Met Pro Arg Val Lys Tyr His Ala Gly Asp
        35   40   45

Gly His Arg Ala Leu Ser Phe Phe Gln Gln Lys Gly Leu Arg Asp Phe
        50   55   60

Asp Thr Leu Leu Leu Ser Asp Asp Gly Asn Thr Leu Tyr Val Gly Ala
65   70   75   80

Arg Glu Thr Val Leu Ala Leu Asn Ile Gln Asn Pro Gly Ile Pro Arg
                85   90   95

Leu Lys Asn Met Ile Pro Trp Pro Ala Ser Glu Arg Lys Lys Thr Glu
                100   105   110

Cys Ala Phe Lys Lys Lys Ser Asn Glu Thr Gln Cys Phe Asn Phe Ile
        115   120   125

Arg Val Leu Val Ser Tyr Asn Ala Thr His Leu Tyr Ala Cys Gly Thr
        130   135   140

Phe Ala Phe Ser Pro Ala Cys Thr Phe Ile Glu Leu Gln Asp Ser Leu
145   150   155   160

Leu Leu Pro Ile Leu Ile Asp Lys Val Met Asp Gly Lys Gly Gln Ser
                165   170   175

Pro Leu Thr Leu Phe Thr Ser Thr Gln Ala Val Leu Val Asp Gly Met
                180   185   190

Leu Tyr Ser Gly Thr Met Asn Asn Phe Leu Gly Ser Glu Pro Ile Leu

82

Met Arg Thr Leu Gly Ser His Pro Val Leu Lys Thr Asp Ile Phe Leu
210   215   220

Arg Trp Leu His Ala Asp Ala Ser Phe Val Ala Ala Ile Pro Ser Thr
225   230   235   240

Gln Val Val Tyr Phe Phe Phe Glu Glu Thr Ala Ser Glu Phe Asp Phe
245   250   255

Phe Glu Glu Leu Tyr Ile Ser Arg Val Ala Gln Val Cys Lys Asn Asp
260   265   270

Val Gly Gly Glu Lys Leu Leu Gln Lys Lys Trp Thr Thr Phe Leu Lys
275   280   285

Ala Gln Leu Leu Cys Ala Gln Pro Gly Gln Leu Pro Phe Asn Ile Ile
290   295   300

Arg His Ala Val Leu Leu Pro Ala Asp Ser Pro Ser Val Ser Arg Ile
305   310   315   320

Tyr Ala Val Phe Thr Ser Gln Trp Gln Val Gly Gly Thr Arg Ser Ser
325   330   335

Ala Val Cys Ala Phe Ser Leu Thr Asp Ile Glu Arg Val Phe Lys Gly
340   345   350

Lys Tyr Lys Glu Leu Asn Lys Glu Thr Ser Arg Trp Thr Thr Tyr Arg
355   360   365

Gly Ser Glu Val Ser Pro Arg Pro Gly Ser Cys Ser Met Gly Pro Ser
370   375   380

Ser Asp Lys Ala Leu Thr Phe Met Lys Asp His Phe Leu Met Asp Glu
385   390   395   400

His Val Val Gly Thr Pro Leu Leu Val Lys Ser Gly Val Glu Tyr Thr
405   410   415

Arg Leu Ala Val Glu Ser Ala Arg Gly Leu Asp Gly Ser Ser His Val
420   425   430

Val Met Tyr Leu Gly Thr Ser Thr Gly Pro Leu His Lys Ala Val Val
435   440   445

Pro Gln Asp Ser Ser Ala Tyr Leu Val Glu Glu Ile Gln Leu Ser Pro

Asp Ser Glu Pro Val Arg Asn Leu Gln Leu Ala Pro Ala Gln Gly Ala
465   470   475   480

Val Phe Ala Gly Phe Ser Gly Gly Ile Trp Arg Val Pro Arg Ala Asn
                485   490   495

Cys Ser Val Tyr Glu Ser Cys Val Asp Cys Val Leu Ala Arg Asp Pro
            500   505   510

His Cys Ala Trp Asp Pro Glu Ser Arg Leu Cys Ser Leu Leu Ser Gly
        515   520   525

Ser Thr Lys Pro Trp Lys Gln Asp Met Glu Arg Gly Asn Pro Glu Trp
        530   535   540

Val Cys Thr Arg Gly Pro Met Ala Arg Ser Pro Arg Arg Gln Ser Pro
545   550   555   560

Pro Gln Leu Ile Lys Glu Val Leu Thr Val Pro Asn Ser Ile Leu Glu
            565   570   575

Leu Arg Cys Pro His Leu Ser Ala Leu Ala Ser Tyr His Trp Ser His
        580   585   590

Gly Arg Ala Lys Ile Ser Glu Ala Ser Ala Thr Val Tyr Asn Gly Ser
        595   600   605

Leu Leu Leu Leu Pro Gln Asp Gly Val Gly Gly Leu Tyr Gln Cys Val
        610   615   620

Ala Thr Glu Asn Gly Tyr Ser Tyr Pro Val Val Ser Tyr Trp Val Asp
625   630   635   640

Ser Gln Asp Gln Pro Leu Ala Leu Asp Pro Glu Leu Ala Gly Val Pro
            645   650   655

Arg Glu Arg Val Gln Val Pro Leu Thr Arg Val Gly Gly Gly Ala Ser
            660   665   670

Met Ala Ala Gln Arg Ser Tyr Trp Pro His Phe Leu Ile Val Thr Val
        675   680   685

Leu Leu Ala Ile Val Leu Leu Gly Val Leu Thr Leu Leu Leu Ala Ser
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Pro Leu Gly Ala Leu Arg Ala Arg Gly Lys Val Gln Gly Cys Gly Met

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Leu Pro Pro Arg Glu Lys Ala Pro Leu Ser Arg Asp Gln His Leu Gln
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Pro Ser Lys Asp His Arg Thr Ser Ala Ser Asp Val Asp Ala Asp Asn
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Asn His Leu Gly Ala Glu Val Ala
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                        87
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<210> 74
<211> 172
<212> PRT
<213> Mus sp.

<400> 74
Met Gly Arg Arg Leu Gly Arg Val Ala Ala Leu Leu Leu Gly Leu Leu
1   5   10   15

Val Glu Cys Thr Glu Ala Lys Lys His Cys Trp Tyr Phe Glu Gly Leu
            20   25   30

Tyr Pro Thr Tyr Tyr Ile Cys Arg Ser Tyr Glu Asp Cys Cys Gly Ser
        35   40   45

Arg Cys Cys Val Arg Ala Leu Ser Ile Gln Arg Leu Trp Tyr Phe Trp
    50   55   60

Phe Leu Leu Met Met Gly Val Leu Phe Cys Cys Gly Ala Gly Phe Phe
65   70   75   80

Ile Arg Arg Arg Met Tyr Pro Pro Pro Leu Ile Glu Glu Pro Thr Phe
                85   90   95

Asn Val Ser Tyr Thr Arg Gln Pro Pro Asn Pro Ala Pro Gly Ala Gln
            100   105   110

Gln Met Gly Pro Pro Tyr Tyr Thr Asp Pro Gly Gly Pro Gly Met Asn
        115   120   125

Pro Val Gly Asn Thr Met Ala Met Ala Phe Gln Val Gln Pro Asn Ser
    130   135   140

Pro His Gly Gly Thr Thr Tyr Pro Pro Pro Ser Tyr Cys Asn Thr
145   150   155   160

Pro Pro Pro Pro Tyr Glu Gln Val Val Lys Asp Lys
                165   170

<210> 75
<211> 398
<212> PRT
<213> Homo sapiens

<400> 75
Met Trp Leu Leu Leu Thr Met Ala Ser Leu Ile Ser Val Leu Gly Thr

88

```
        1                5                      10                          15

Thr His Gly Leu Phe Gly Lys Leu His Pro Gly Ser Pro Glu Val Thr
                    20                25                      30

Met Asn Ile Ser Gln Met Ile Thr Tyr Trp Gly Tyr Pro Asn Glu Glu
                35                40                      45

Tyr Glu Val Val Thr Glu Asp Gly Tyr Ile Leu Glu Val Asn Arg Ile
           50                55                      60

Pro Tyr Gly Lys Lys Asn Ser Gly Asn Thr Gly Gln Arg Pro Val Val
65                    70                75                      80

Phe Leu Gln His Gly Leu Leu Ala Ser Ala Thr Asn Trp Ile Ser Asn
                    85                90                      95

Leu Pro Asn Asn Ser Leu Ala Phe Ile Leu Ala Asp Ala Gly Tyr Asp
                   100               105              110

Val Trp Leu Gly Asn Ser Arg Gly Asn Thr Trp Ala Arg Arg Asn Leu
           115               120              125

Tyr Tyr Ser Pro Asp Ser Val Glu Phe Trp Ala Phe Ser Phe Asp Glu
           130               135              140

Met Ala Lys Tyr Asp Leu Pro Ala Thr Ile Asp Phe Ile Val Lys Lys
145               150               155              160

Thr Gly Gln Lys Gln Leu His Tyr Val Gly His Ser Gln Gly Thr Thr
                   165               170              175

Ile Gly Phe Ile Ala Phe Ser Thr Asn Pro Ser Leu Ala Lys Arg Ile
               180               185              190

Lys Thr Phe Tyr Ala Leu Ala Pro Val Ala Thr Val Lys Tyr Thr Lys
           195               200              205

Ser Leu Ile Asn Lys Leu Arg Phe Val Pro Gln Ser Leu Phe Lys Phe
           210               215              220

Ile Phe Gly Asp Lys Ile Phe Tyr Pro His Asn Phe Phe Asp Gln Phe
225               230               235              240

Leu Ala Thr Glu Val Cys Ser Arg Glu Met Leu Asn Leu Leu Cys Ser
                   245               250              255

Asn Ala Leu Phe Ile Ile Cys Gly Phe Asp Ser Lys Asn Phe Asn Thr
```

89

Ser Arg Leu Asp Val Tyr Leu Ser His Asn Pro Ala Gly Thr Ser Val
        275   280   285

Gln Asn Met Phe His Trp Thr Gln Ala Val Lys Ser Gly Lys Phe Gln
        290   295   300

Ala Tyr Asp Trp Gly Ser Pro Val Gln Asn Arg Met His Tyr Asp Gln
305   310   315   320

Ser Gln Pro Pro Tyr Tyr Asn Val Thr Ala Met Asn Val Pro Ile Ala
                325   330   335

Val Trp Asn Gly Gly Lys Asp Leu Leu Ala Asp Pro Gln Asp Val Gly
                340   345   350

Leu Leu Leu Pro Lys Leu Pro Asn Leu Ile Tyr His Lys Glu Ile Pro
        355   360   365

Phe Tyr Asn His Leu Asp Phe Ile Trp Ala Met Asp Ala Pro Gln Glu
        370   375   380

Val Tyr Asn Asp Ile Val Ser Met Ile Ser Glu Asp Lys Lys
385   390   395

<210> 76
<211> 760
<212> PRT
<213> Mus sp.

<400> 76
Met Ala Leu Pro Ser Leu Gly Gln Asp Ser Trp Ser Leu Leu Arg Val
    1   5   10   15

Phe Phe Phe Gln Leu Phe Leu Leu Pro Ser Leu Pro Pro Ala Ser Gly
                20   25   30

Thr Gly Gly Gln Gly Pro Met Pro Arg Val Lys Tyr His Ala Gly Asp
            35   40   45

Gly His Arg Ala Leu Ser Phe Phe Gln Gln Lys Gly Leu Arg Asp Phe
        50   55   60

Asp Thr Leu Leu Leu Ser Asp Asp Gly Asn Thr Leu Tyr Val Gly Ala
    65   70   75   80

90

Arg Glu Thr Val Leu Ala Leu Asn Ile Gln Asn Pro Gly Ile Pro Arg
                85   90   95

Leu Lys Asn Met Ile Pro Trp Pro Ala Ser Glu Arg Lys Lys Thr Glu
              100   105   110

Cys Ala Phe Lys Lys Lys Ser Asn Glu Thr Gln Cys Phe Asn Phe Ile
          115   120   125

Arg Val Leu Val Ser Tyr Asn Ala Thr His Leu Tyr Ala Cys Gly Thr
    130   135   140

Phe Ala Phe Ser Pro Ala Cys Thr Phe Ile Glu Leu Gln Asp Ser Leu
145   150   155   160

Leu Leu Pro Ile Leu Ile Asp Lys Val Met Asp Gly Lys Gly Gln Ser
              165   170   175

Pro Leu Thr Leu Phe Thr Ser Thr Gln Ala Val Leu Val Asp Gly Met
              180   185   190

Leu Tyr Ser Gly Thr Met Asn Asn Phe Leu Gly Ser Glu Pro Ile Leu
          195   200   205

Met Arg Thr Leu Gly Ser His Pro Val Leu Lys Thr Asp Ile Phe Leu
    210   215   220

Arg Trp Leu His Ala Asp Ala Ser Phe Val Ala Ala Ile Pro Ser Thr
225   230   235   240

Gln Val Val Tyr Phe Phe Phe Glu Glu Thr Ala Ser Glu Phe Asp Phe
              245   250   255

Phe Glu Glu Leu Tyr Ile Ser Arg Val Ala Gln Val Cys Lys Asn Asp
              260   265   270

Val Gly Gly Glu Lys Leu Leu Gln Lys Lys Trp Thr Thr Phe Leu Lys
    275   280   285

Ala Gln Leu Leu Cys Ala Gln Pro Gly Gln Leu Pro Phe Asn Ile Ile
    290   295   300

Arg His Ala Val Leu Leu Pro Ala Asp Ser Pro Ser Val Ser Arg Ile
305   310   315   320

Tyr Ala Val Phe Thr Ser Gln Trp Gln Val Gly Gly Thr Arg Ser Ser
              325   330   335

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91

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Ala Val Cys Ala Phe Ser Leu Thr Asp Ile Glu Arg Val Phe Lys Gly
        340                 345                 350

Lys Tyr Lys Glu Leu Asn Lys Glu Thr Ser Arg Trp Thr Thr Tyr Arg
        355                 360                 365

Gly Ser Glu Val Ser Pro Arg Pro Gly Ser Cys Ser Met Gly Pro Ser
        370                 375                 380

Ser Asp Lys Ala Leu Thr Phe Met Lys Asp His Phe Leu Met Asp Glu
385                 390                 395                 400

His Val Val Gly Thr Pro Leu Leu Val Lys Ser Gly Val Glu Tyr Thr
                405                 410                 415

Arg Leu Ala Val Glu Ser Ala Arg Gly Leu Asp Gly Ser Ser His Val
        420                 425                 430

Val Met Tyr Leu Gly Thr Ser Thr Gly Pro Leu His Lys Ala Val Val
        435                 440                 445

Pro Gln Asp Ser Ser Ala Tyr Leu Val Glu Glu Ile Gln Leu Ser Pro
    450                 455                 460

Asp Ser Glu Pro Val Arg Asn Leu Gln Leu Ala Pro Ala Gln Gly Ala
465                 470                 475                 480

Val Phe Ala Gly Phe Ser Gly Gly Ile Trp Arg Val Pro Arg Ala Asn
                485                 490                 495

Cys Ser Val Tyr Glu Ser Cys Val Asp Cys Val Leu Ala Arg Asp Pro
            500                 505                 510

His Cys Ala Trp Asp Pro Glu Ser Arg Leu Cys Ser Leu Leu Ser Gly
        515                 520                 525

Ser Thr Lys Pro Trp Lys Gln Asp Met Glu Arg Gly Asn Pro Glu Trp
    530                 535                 540

Val Cys Thr Arg Gly Pro Met Ala Arg Ser Pro Arg Arg Gln Ser Pro
545                 550                 555                 560

Pro Gln Leu Ile Lys Glu Val Leu Thr Val Pro Asn Ser Ile Leu Glu
            565                 570                 575

Leu Arg Cys Pro His Leu Ser Ala Leu Ala Ser Tyr His Trp Ser His
            580                 585                 590
```

92

```
Gly Arg Ala Lys Ile Ser Glu Ala Ser Ala Thr Val Tyr Asn Gly Ser
        595                 600                 605

Leu Leu Leu Leu Pro Gln Asp Gly Val Gly Gly Leu Tyr Gln Cys Val
        610                 615                 620

Ala Thr Glu Asn Gly Tyr Ser Tyr Pro Val Val Ser Tyr Trp Val Asp
625                 630                 635                 640

Ser Gln Asp Gln Pro Leu Ala Leu Asp Pro Glu Leu Ala Gly Val Pro
                645                 650                 655

Arg Glu Arg Val Gln Val Pro Leu Thr Arg Val Gly Gly Gly Ala Ser
                660                 665                 670

Met Ala Ala Gln Arg Ser Tyr Trp Pro His Phe Leu Ile Val Thr Val
        675                 680                 685

Leu Leu Ala Ile Val Leu Leu Gly Val Leu Thr Leu Leu Leu Ala Ser
        690                 695                 700

Pro Leu Gly Ala Leu Arg Ala Arg Gly Lys Val Gln Gly Cys Gly Met
705                 710                 715                 720

Leu Pro Pro Arg Glu Lys Ala Pro Leu Ser Arg Asp Gln His Leu Gln
                725                 730                 735

Pro Ser Lys Asp His Arg Thr Ser Ala Ser Asp Val Asp Ala Asp Asn
                740                 745                 750

Asn His Leu Gly Ala Glu Val Ala
        755                 760


<210> 77
<211> 3046
<212> DNA
<213> Mus sp.

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tgcccagagt caaataccat gctggagacg ggcacaggc cctcagcttc ttccaacaaa 240
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gcaatgagac acagtgtttc aacttcattc gagtcctggt ctcttacaat gctactcacc 480
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93

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<210> 78
<211> 1436
<212> PRT

94
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<213> Bos sp.

<400> 78
Met Ala Leu Gly Arg His Leu Ser Leu Arg Gly Leu Cys Val Leu Leu
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Leu Gly Thr Met Val Gly Gly Gln Ala Leu Glu Leu Arg Leu Lys Asp
              20                  25                  30

Gly Val His Arg Cys Glu Gly Arg Val Glu Val Lys His Gln Gly Glu
              35                  40                  45

Trp Gly Thr Val Asp Gly Tyr Arg Trp Thr Leu Lys Asp Ala Ser Val
      50                  55                  60

Val Cys Arg Gln Leu Gly Cys Gly Ala Ala Ile Gly Phe Pro Gly Gly
 65                  70                  75                  80

Ala Tyr Phe Gly Pro Gly Leu Gly Pro Ile Trp Leu Leu Tyr Thr Ser
              85                  90                  95

Cys Glu Gly Thr Glu Ser Thr Val Ser Asp Cys Glu His Ser Asn Ile
             100                 105                 110

Lys Asp Tyr Arg Asn Asp Gly Tyr Asn His Gly Arg Asp Ala Gly Val
             115                 120                 125

Val Cys Ser Gly Phe Val Arg Leu Ala Gly Gly Asp Gly Pro Cys Ser
             130                 135                 140

Gly Arg Val Glu Val His Ser Gly Glu Ala Trp Ile Pro Val Ser Asp
145                 150                 155                 160

Gly Asn Phe Thr Leu Ala Thr Ala Gln Ile Ile Cys Ala Glu Leu Gly
             165                 170                 175

Cys Gly Lys Ala Val Ser Val Leu Gly His Glu Leu Phe Arg Glu Ser
             180                 185                 190

Ser Ala Gln Val Trp Ala Glu Glu Phe Arg Cys Glu Gly Glu Glu Pro
             195                 200                 205

Glu Leu Trp Val Cys Pro Arg Val Pro Cys Pro Gly Gly Thr Cys His
             210                 215                 220

His Ser Gly Ser Ala Gln Val Val Cys Ser Ala Tyr Ser Glu Val Arg
225                 230                 235                 240

95

Leu Met Thr Asn Gly Ser Ser Gln Cys Glu Gly Gln Val Glu Met Asn
              245                  250                255

Ile Ser Gly Gln Trp Arg Ala Leu Cys Ala Ser His Trp Ser Leu Ala
              260                  265              270

Asn Ala Asn Val Ile Cys Arg Gln Leu Gly Cys Gly Val Ala Ile Ser
              275                  280              285

Thr Pro Gly Gly Pro His Leu Val Glu Glu Gly Asp Gln Ile Leu Thr
    290                  295              300

Ala Arg Phe His Cys Ser Gly Ala Glu Ser Phe Leu Trp Ser Cys Pro
305                   310              315              320

Val Thr Ala Leu Gly Gly Pro Asp Cys Ser His Gly Asn Thr Ala Ser
              325                  330              335

Val Ile Cys Ser Gly Asn Gln Ile Gln Val Leu Pro Gln Cys Asn Asp
              340                  345              350

Ser Val Ser Gln Pro Thr Gly Ser Ala Ala Ser Glu Asp Ser Ala Pro
              355                  360              365

Tyr Cys Ser Asp Ser Arg Gln Leu Arg Leu Val Asp Gly Gly Gly Pro
              370                  375              380

Cys Ala Gly Arg Val Glu Ile Leu Asp Gln Gly Ser Trp Gly Thr Ile
385                   390              395              400

Cys Asp Asp Gly Trp Asp Leu Asp Asp Ala Arg Val Val Cys Arg Gln
              405                  410              415

Leu Gly Cys Gly Glu Ala Leu Asn Ala Thr Gly Ser Ala His Phe Gly
              420                  425              430

Ala Gly Ser Gly Pro Ile Trp Leu Asp Asn Leu Asn Cys Thr Gly Lys
              435                  440              445

Glu Ser His Val Trp Arg Cys Pro Ser Arg Gly Trp Gly Gln His Asn
    450                  455              460

Cys Arg His Lys Gln Asp Ala Gly Val Ile Cys Ser Glu Phe Leu Ala
465                   470              475              480

Leu Arg Met Val Ser Glu Asp Gln Gln Cys Ala Gly Trp Leu Glu Val
              485                  490              495

Phe Tyr Asn Gly Thr Trp Gly Ser Val Cys Arg Asn Pro Met Glu Asp
            500                 505                 510

Ile Thr Val Ser Thr Ile Cys Arg Gln Leu Gly Cys Gly Asp Ser Gly
            515                 520                 525

Thr Leu Asn Ser Ser Val Ala Leu Arg Glu Gly Phe Arg Pro Gln Trp
        530                 535                 540

Val Asp Arg Ile Gln Cys Arg Lys Thr Asp Thr Ser Leu Trp Gln Cys
545                 550                 555                 560

Pro Ser Asp Pro Trp Asn Tyr Asn Ser Cys Ser Pro Lys Glu Glu Ala
                565                 570                 575

Tyr Ile Trp Cys Ala Asp Ser Arg Gln Ile Arg Leu Val Asp Gly Gly
                580                 585                 590

Gly Arg Cys Ser Gly Arg Val Glu Ile Leu Asp Gln Gly Ser Trp Gly
            595                 600                 605

Thr Ile Cys Asp Asp Arg Trp Asp Leu Asp Asp Ala Arg Val Val Cys
        610                 615                 620

Lys Gln Leu Gly Cys Gly Glu Ala Leu Asp Ala Thr Val Ser Ser Phe
625                 630                 635                 640

Phe Gly Thr Gly Ser Gly Pro Ile Trp Leu Asp Glu Val Asn Cys Arg
                645                 650                 655

Gly Glu Glu Ser Gln Val Trp Arg Cys Pro Ser Trp Gly Trp Arg Gln
            660                 665                 670

His Asn Cys Asn His Gln Glu Asp Ala Gly Val Ile Cys Ser Gly Phe
            675                 680                 685

Val Arg Leu Ala Gly Gly Asp Gly Pro Cys Ser Gly Arg Val Glu Val
        690                 695                 700

His Ser Gly Glu Ala Trp Thr Pro Val Ser Asp Gly Asn Phe Thr Leu
705                 710                 715                 720

Pro Thr Ala Gln Val Ile Cys Ala Glu Leu Gly Cys Gly Lys Ala Val
                725                 730                 735

Ser Val Leu Gly His Met Pro Phe Arg Glu Ser Asp Gly Gln Val Trp
            740                 745                 750

97

Ala Glu Glu Phe Arg Cys Asp Gly Gly Glu Pro Glu Leu Trp Ser Cys
        755                 760                 765

Pro Arg Val Pro Cys Pro Gly Gly Thr Cys Leu His Ser Gly Ala Ala
        770                 775                 780

Gln Val Val Cys Ser Val Tyr Thr Glu Val Gln Leu Met Lys Asn Gly
785                 790                 795                 800

Thr Ser Gln Cys Glu Gly Gln Val Glu Met Lys Ile Ser Gly Arg Trp
                805                 810                 815

Arg Ala Leu Cys Ala Ser His Trp Ser Leu Ala Asn Ala Asn Val Val
                820                 825                 830

Cys Arg Gln Leu Gly Cys Gly Val Ala Ile Ser Thr Pro Arg Gly Pro
        835                 840                 845

His Leu Val Glu Gly Gly Asp Gln Ile Ser Thr Ala Gln Phe His Cys
        850                 855                 860

Ser Gly Ala Glu Ser Phe Leu Trp Ser Cys Pro Val Thr Ala Leu Gly
865                 870                 875                 880

Gly Pro Asp Cys Ser His Gly Asn Thr Ala Ser Val Ile Cys Ser Gly
                885                 890                 895

Asn His Thr Gln Val Leu Pro Gln Cys Asn Asp Phe Leu Ser Gln Pro
                900                 905                 910

Ala Gly Ser Ala Ala Ser Glu Glu Ser Ser Pro Tyr Cys Ser Asp Ser
        915                 920                 925

Arg Gln Leu Arg Leu Val Asp Gly Gly Gly Pro Cys Gly Gly Arg Val
        930                 935                 940

Glu Ile Leu Asp Gln Gly Ser Trp Gly Thr Ile Cys Asp Asp Asp Trp
945                 950                 955                 960

Asp Leu Asp Asp Ala Arg Val Val Cys Arg Gln Leu Gly Cys Gly Glu
                965                 970                 975

Ala Leu Asn Ala Thr Gly Ser Ala His Phe Gly Ala Gly Ser Gly Pro
        980                 985                 990

Ile Trp Leu Asp Asp Leu Asn Cys Thr Gly Lys Glu Ser His Val Trp
        995                 1000                1005

Arg Cys Pro Ser Arg Gly Trp Gly Arg His Asp Cys Arg His Lys Glu
   1010                 1015                 1020

Asp Ala Gly Val Ile Cys Ser Glu Phe Leu Ala Leu Arg Met Val Ser
1025                 1030                 1035                 1040

Glu Asp Gln Gln Cys Ala Gly Trp Leu Glu Val Phe Tyr Asn Gly Thr
            1045                 1050                 1055

Trp Gly Ser Val Cys Arg Ser Pro Met Glu Asp Ile Thr Val Ser Val
            1060                 1065                 1070

Ile Cys Arg Gln Leu Gly Cys Gly Asp Ser Gly Ser Leu Asn Thr Ser
            1075                 1080                 1085

Val Gly Leu Arg Glu Gly Ser Arg Pro Arg Trp Val Asp Leu Ile Gln
   1090                 1095                 1100

Cys Arg Lys Met Asp Thr Ser Leu Trp Gln Cys Pro Ser Gly Pro Trp
   1105                 1110                 1115                 1120

Lys Tyr Ser Ser Cys Ser Pro Lys Glu Glu Ala Tyr Ile Ser Cys Glu
            1125                 1130                 1135

Gly Arg Arg Pro Lys Ser Cys Pro Thr Ala Ala Ala Cys Thr Asp Arg
            1140                 1145                 1150

Glu Lys Leu Arg Leu Arg Gly Gly Asp Ser Glu Cys Ser Gly Arg Val
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Glu Val Trp His Asn Gly Ser Trp Gly Thr Val Cys Asp Asp Ser Trp
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Ser Leu Ala Glu Ala Glu Val Val Cys Gln Gln Leu Gly Cys Gly Gln
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Ala Leu Glu Ala Val Arg Ser Ala Ala Phe Gly Pro Gly Asn Gly Ser
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Ile Trp Leu Asp Glu Val Gln Cys Gly Gly Arg Glu Ser Ser Leu Trp
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Asp Cys Val Ala Glu Pro Trp Gly Gln Ser Asp Cys Lys His Glu Glu
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Asp Ala Gly Val Arg Cys Ser Gly Val Arg Thr Thr Leu Pro Thr Thr
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99

Thr Ala Gly Thr Arg Thr Thr Ser Asn Ser Leu Pro Gly Ile Phe Ser
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Leu Pro Gly Val Leu Cys Leu Ile Leu Gly Ser Leu Leu Phe Leu Val
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Leu Val Ile Leu Val Thr Gln Leu Leu Arg Trp Arg Ala Glu Arg Arg
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Ala Leu Ser Ser Tyr Glu Asp Ala Leu Ala Glu Ala Val Tyr Glu Glu
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Leu Asp Tyr Leu Leu Thr Gln Lys Glu Gly Leu Gly Ser Pro Asp Gln
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Met Thr Asp Val Pro Asp Glu Asn Tyr Asp Asp Ala Glu Glu Val Pro
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Val Pro Gly Thr Pro Ser Pro Ser Gln Gly Asn Glu Glu Glu Val Pro
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Pro Glu Lys Glu Asp Gly Val Arg Ser Ser Gln Thr Gly Ser Phe Leu
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Asn Phe Ser Arg Glu Ala Ala Asn Pro Gly Glu Gly Glu Glu Ser Phe
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